

# THE IDENTIFICATION OF INDIAN BUTTERFLIES

BY

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## PREFACE TO SECOND EDITION

The first edition was published in 1927 and consisted of reprints with amendments of articles that had appeared in volumes xxviii to xxxi of the *Journal of the Bombay Natural History Society*. The edition was limited to 200 copies, which were sold out within two years. As sufficient demands for the book are anticipated to justify republication, the Committee of the Society have decided to issue a second edition, which it is hoped will prove as popular as the first edition.

The Introduction has been re-written and enlarged, so as to furnish as much information as possible, compatible with the scope of the work, which does not purport to be a text-book, but only an aid to collectors. Much of the information regarding the early stages has been taken from the articles published by Mr. T. R. Bell in the *Journal* on *The Common Butterflies of the Plains* and regarding structure from *Butterfly Lore* by Dr. H. Eltringham.

Considerable additions to our knowledge have been made recently in respect of the Gilgit-Hunza area by Maj.-Gen. Sir H. C. Tytler: of Burma by the same collector and the late Mr. G. E. R. Cooper: of Baluchistan by the author during his four years' residence at Quetta: and of the Andaman and Nicobar Islands by Lt.-Col. M. L. Ferrar, late Chief Commissioner of the Islands, due to whose hospitality and kindness, the author was able to visit the islands and to study his collection.

The keys have been brought up to date and to facilitate the compilation of the Zoological Record, a separate list has been prepared of the generic, specific and varietal names used for the first time in this volume. The keys to the Hesperiidæ have been completely revised. Since writing the first edition, the author has been able to study the material contained in the following important collections: Elwes, Grose Smith and Swinhoe now in the British Museum: Lord Rothschild's collection at Tring: the Oberthur collection at Rennes. In addition Lord Rothschild very kindly permitted the author to take away for study many examples of Hesperiidæ from the Oriental and Australian Regions. The keys have been limited to the Hesperiidæ occurring in Asia up to the limits of the Oriental Region. It is the author's intention to publish separately keys to the Hesperiidæ of the Australian Region.

Capt. N. D. Riley of the British Museum has assisted the author in clearing up many problems relating to nomenclature, etc.

The Author wishes to dedicate this work to the Bombay Natural History Society, without whose generous assistance and encouragement during the past 32 years, its publication would not have been possible.

## LIST OF NEW NAMES INTRODUCED IN THIS VOLUME

(Note.—The new names are in italics)

### Papilionidæ.

*Tros aristolochiæ sawi*, Car Nicobar and *kondulana*, South Nicobars. *Zetides agammemnon pulo*, South Nicobars.

### Pieridæ.

*Euchlœ charlonia doveri*, W. and N. Baluchistan and *pila*, Zhob. *Aporia leucodice sara*, Kumaon. *Gandaca harina nicobarica*, Car Nicobar. *Terias blanda grisea*, South Nicobars.

### Danaidæ.

*Danaïs melanippus camorta*, Car Nicobar. *Euplœa andamanensis bumila*, Little Andaman.

### Satyridæ.

*Lethe brisanda sadona*, Sadon, Upper Burma. *Maniola tenuistigma laspura*, Chitral. *Eumenis mniszechii balucha* and dry season form *pallida*, Baluchistan. *Aulocera padma burnettii*, Zhob. *Erebia shallada tarbena*, Chitral. *Orsotriœna medus nicobarica*, Car Nicobar.

### Nymphalidæ.

*Parthenos sylvia nila*, S. Nicobars. *Neptis hylas sambilanga*, S. Nicobars: *zaida putoia*, Dawnas, Burma. *Vanessa egea balucha* and dry season form *pallida*, Baluchistan: *egea undina* wet season form *chitralica*, Chitral: *egea kashmira*, Kashmir: *egea cognata* wet season form *inica*, Western Himalayas. *Melitœa robertsi lutko*, Chitral.

### Lycænidæ.

*Gerydus croton karennia*, Karens and *tavoyana*, Tavoy: *gethusus shania*, Burma. *Tarucus venosus hazara*, Abbottabad: *theophrastus indica*, Punjab. *Everes argiades indica*, N.-W. Himalayas. *Lycænopsis chelaka lenya*, S. Burma: *minima*, Manipur. *Polyommatus lœwii laura*, Ladak: *sieversi felicia*, Baluchistan: *hyrcana*

**Lycænidæ—contd.**

*kacaja*, Baluchistan : *cytis laspura*, Chitral : *iris hanna*, Baluchistan : *actis bogra*, Baluchistan : *eros shingara*, Baluchistan and *wazira*, Waziristan. *Euchrysops pandava minuta*, Peshawar. *Jamides ferrari*, S. Nicobars : *alecto fusca*, Andamans. *Nacaduba hermus major*, S. Nicobars : *vajuva varia*, S. Nicobars : *helicon brunnea*, Andamans and *kondulana*, S. Nicobars : *nora dilata*, Car Nicobar. *Heliophorus brahma major*, Assam and *mogoka*, N. Burma. *Neolycaena connæ*, Baluchistan. *Curetis saronis obscura*, Car Nicobar. *Amblypodia dispar diluta*, Maymyo : *agnis pallida*, Tavoy : *moolaiana maya*, S. Burma : *atosia aria*, N. Burma : *alax*, N. Burma ; *arvina ardea*, Assam. *Loxura atymnus nicobarica*, Car Nicobar. *Marmessus archbaldi*, Burma.

**Hesperiidæ.**

*Pintara* type species *pinwilli*, But. *Chitralia* type species *lesliei*, Evans vice *Elwesia*, preoccupied. *Oriens* type species *gola* vice *Nicevillea*, preoccupied. *Hasora junebris*, Malaya : *proxissima siamica*, Siam and *siva*, Borneo : *vitta indica*, India and Burma : *vitta sula*, Sula Besi. *Ismene jaina astigmata*, Andamans : *velva*, Perak : *harisa mangolina*, Sula Mangoli. *Choaspes stigmata*, India and Burma : *stigmata caudata*, S. Burma, Malaya, etc. : *stigmata extensa*, Java : *similis*, N.-E. India : *benjaminii pallida*, Sumatra : *plateni furcata*, N.-E. India. *Orthopætes phanæus fulva*, Dawnas, Burma. *Calliana pieridoides chinensis*, W. China. *Celenorrhinus mælleri*, Sikkim ; *leucocera parva*, Java : *ruficornis celebica* Celebes. *Satarupa nymphalis oberthueri*, W. China : *splendens intermedia*, W. China : *gopala hainana*, Hainan and *malaya*, Sumatra and Malaya : *affinis niasica*, Nias. *Tagiades litigiosa ceylonica*, Ceylon, *ultra* S. Burma and *andamanica* with form *major*, Andamans. *Odina hieroglyphica sulina*, Sula Besi. *Daimio limax philippina*, Palawan : *celebica sulina*, Sula Islands. *Caprona ransonnæti* dry season form *lanka*, Ceylon : *agama brunnea*, Ceylon. *Carcharodus althææ balucha*, Baluchistan. *Aubertia dieckmanni minor*, E. Thibet and *watsoni*, Burma. *Astictopterus jama mercara*, S. India. *Æromachus chinensis tali*, Yunnan. *Scobura cephalina*, Java. *Koruthaialos butleri sumatrana*, Sumatra. *Erionota thrax apicalis*, Assam. *Sepa fenestrata lenya*, S. Burma and Malaya : *moisticta javana*, Java : *feralia ferox*, Java : *guttulifera kualu*, Malaya. *Lotongus sarala conjuncta*, N. Burma and *chinensis*, W. China. *Zela zeus major*, Mindanao : *zero*, Borneo. *Zea mythea kala*, Nias. *Unkana attina* ♀ form *flava*, Tonkin. *Pirdana ismene major*, N.-E. India and N. Burma. *Halpe albipectus prominens*, N. Shan States : *separata magna*, Assam : *lucasi merea*,

**Mesperiidæ—contd.**

S.-E. Thibet : *gupta leechii*, China : *sitala cochina*, Cochin, S. India : *tytleri*, N.-E. India : *auriferus diana*, S. Burma and *toxopea*, Java : *brevicornis*, Burma : *confusa*, N.-E. India and Burma : *pelethronix pagaia*, Burma and Malaya and *linibanga*, Borneo. *Taractrocera ziclea dongola*, Celebes. *Padraona ilion sutrana*, Timor : *sapitana amor*, Timor : *cato*, Ceylon : *cato clio*, Himalayas and *copia*, Sumatra : *pseudomæsa zatilla* form *pallida*, N.-E. India and Burma : *pseudomæsa ino*, S. Burma and Malaya : *flavaalcon*, Karens, Burma and *sita*, N.-E. India and N. Burma : *juno*, S. Burma and Malaya : *tropica diana*, S. India and *nina*, Andamans : *palnia afer*, Sumatra : *nitida ajax*, S. Burma : *mara*, Sikkim. *Astycus pythias lanka*, Ceylon and S. India and *puloa*, Pulo-Jaut : *ternatensis sula*, Sula Islands. *Cephrenes palmarum nicobarica*, Nicobars. *Ochlodes siva karenmia*, Karen Hills : *brahma rama*, Sikkim and N. Burma. *Iton semamora barina*, Borneo. *Baoris sirius sirina*, N.-E. India and *fusca*, Malaya and Borneo : *cahira cara*, Assam and *tenuis*, S. Burma : *confusa*, S. Burma : *austeni reducta*, Borneo and Sumba : *kumara javana*, Java and *elongata*, Borneo : *philippina belli*, India and Malaya : *sina*, China : *discreta felicia*, W. China.

In all cases the types will be assigned or placed in the British Museum.

## POSTSCRIPT

Since going to press, the following amendments have been found necessary :

1. Mr. G. Talbot in the *Entomologist* for October 1931 (page 227) proposed certain changes in the names of Pierid genera, some of which have been disputed by Capt. A. F. Hemming in the December issue (page 272). In accordance with the International Rules of Nomenclature, the following changes appear to be needed :

*Cepora*, Billberg, replaces *Huphina* (B. 9).

*Colias*, F, replaces *Gonepteryx* (B. 14).

*Coliastes*, Hemming, replaces *Colias* (B. 16).

*Eurema*, Hub, replaces *Terias* (B. 15).

2. From an examination of the type the correct name for No. B. 15.6 is *tecnessa*, DeN, in place of *lacteola sarinoides*, Fruh.

3. On page 190. F47-2 $\beta$ . Add 'M' after 'mahratta'.

4. On page 216. H12-9. For 'kala' read 'nigra'.

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## INTRODUCTION

### I. Introductory.

1. I do not think that anyone who has taken the trouble to look can fail to be impressed by the butterflies of India. There are many who would like to collect them and study them further, but few proceed beyond mere admiration because of the difficulties involved in following a pursuit without a guide and in attempting to preserve delicate insects, faced with a trying climate, the depredations of insects and the frequency of moves from station to station. It is the object of this book to describe how butterflies may be collected, preserved and identified as well as to draw attention to the variety of interests that underlie the study of these insects.

2. It has been asserted that the story of evolution is written on the wings of butterflies, if only we could attain the skill to interpret the writing. A full knowledge of nature can only be obtained by careful observation under natural conditions correlated with the study in museums, laboratories and libraries of the various forms under which nature displays itself and of the information gained by other observers. Butterflies are considered to have only a minor economic value in relation to man and are consequently neglected by the professional entomologist. So here is a fruitful field wherein the amateur can do useful work in respect of the attainment of knowledge. He will not take long to discover some of the many gaps and perhaps be able to fill them.

3. The Indian Empire, wherein for zoological purposes are included Ceylon and Burma, is probably the most ideal country in the world for studying butterflies. It comprises the extremes of heat and cold, of dampness and dryness, of desert and rank jungle, low-lying plains and the highest mountains in the world, islands and continental areas, an ever varying vegetation and in many areas sharply marked seasons.

4. I may say that I have been collecting butterflies in India for 33 years and my interest increases as the years go on, my only regret being that I did not make better use of my early opportunities. I have had to work pretty hard at my profession as a military engineer and have always found that the pursuit of my hobby affords the best possible rest from the cares of work, both during the periods when I am at duty and during spells of leave spent in exploring fresh fields. It is a healthy outdoor pursuit with occupation for the evenings or wet days and in addition I can

look forward to having plenty of interesting work to do when I retire from the service.

5. The Bombay Natural History Society, under whose auspices this book is published, are always prepared to render every assistance to their members—in respect of obtaining apparatus for collecting, furnishing local knowledge regarding districts which it is desired to visit, identifying specimens and publishing such information as may have been collected. In their Journal, which to my mind is the most attractive Natural History Journal in the world, there are to be found interesting articles and notes on butterflies as well as on all other branches of Natural History. Every real 'Aurelian' (old name for a butterfly collector after the gold enamel found on certain chrysalises) should join the Society as soon as possible: the address of the Honorary Secretary is 6 Apollo St., Bombay.

## II. The Position of the Butterfly in Nature.

1. At the top of the Animal Kingdom, of which the butterfly is a member, come the backbone-owners or Vertebrates, led by man and followed by the other mammals, the birds, reptiles and fishes. At the bottom come the formless animals such as jelly-fish and here the lowest forms merge with the lowliest forms of the Vegetable Kingdom. In the middle come the Arthropoda, animals with jointed bodies, lobsters, scorpions, millipedes and insects.

2. Insects constitute the largest land group in nature both in respect of numbers of species and individuals of particular species. The group is divided into a number of orders of which the better known are the cockroaches, dragonflies, cicadas, grasshoppers, flies, ants and bees, bugs, fleas, beetles and Lepidoptera (Scale-winged), comprising the butterflies and moths, distinguished from other insects by having scales on the wings and a complete series of transformations, egg to caterpillar to chrysalis to butterfly or moth.

3. The order Lepidoptera is divided into a number of sub-orders of which Rhopalocera (Clubbed antennæ) and Grypocera (Hooked antennæ—'Skippers') constitute the Butterflies or Diurna (Day-fliers). There is no absolute method whereby a butterfly can be at once distinguished from a moth, but after a little practice it will be found that the differences noted below will enable the collector to decide the point.

(a) The egg is usually dome-shaped, upright and sculptured. In moths it is usually rounded or flat, scale-like and reticulate.

(b) The caterpillar has, in addition to the 3 pairs of true legs, 5 pairs (4 central and 1 anal) of sucker legs (prolegs), one

or more pairs of which may be absent or reduced in moths. In moths the end of the proleg may be triangularly dilated and the anal pair may be held stretched out behind with the basal fleshy part often broad and flattened. The neck is often ill-defined in the moth caterpillar. No butterfly caterpillar has hairs arranged in tufts or pencils or dense enough to obscure the surface. Butterfly caterpillars often have spines, branched or simple: fleshy processes are unusual.

(c) The chrysalis of a butterfly may hang from a twig, be secured thereto by a girdle or lie on a leaf or on the ground or be enclosed in a cell made of a leaf. Moths commonly construct a cocoon for the chrysalis, bury in the ground or conceal the chrysalis by various means.

(d) Butterflies fly by day and moths by night as a rule. Some butterflies remain dormant till dusk and some prefer the shade to the sun.

(e) Butterflies sit with their wings erect or spread out flat, not as moths often do with their wings folded back.

(f) The antennæ (feelers) of a butterfly are usually knobbed or hooked at the end: are always plain, never branched or fringed (Ciliate). They are always held straight and either erect or extended in front of the head, never curved, twisted or folded back along the body or concealed under the wings.

(g) The eyes of a butterfly are usually larger and more prominent.

(h) The division between the thorax (central portion whence emanate the wings and legs) and the abdomen (body) is better defined in butterflies.

(i) In order to ensure rigidity of the wings the base of the hindwing in butterflies is expanded into a shoulder fitting under the forewing. In moths rigidity is attained as a rule by means of a frenulum or jugum. The frenulum is a stiff bristle or group of hairs at the base of the upper part (costa) of the hindwing, which engages in a catch or groove or group of bristles (retinaculum) on the lower surface of the forewing: some skippers are provided with this apparatus in its most elementary form. The jugum is a membraneous or spine-like process from the base of the lower part (dorsal margin) of the forewing passing under the hindwing and holding it between the jugum and the forewing.

4. The age of butterflies is unknown and as may be expected very few fossils have ever been found. Insects (cockroaches) are found in the Silurian deposits and mayflies in the Devonian, proving at least that insects are very old. Butterflies first appear in the Tertiary age.

5. Economically butterflies are of little importance. The caterpillars of some species are destructive to palms, rice, guavas, pomegranates, cabbages, etc., but usually to no great extent. As fertilizing agents for vegetation they are unimportant. To a minor extent the wings of certain American species (*Morphos*) are used for ornamental purposes.

### III. Division into Families.

The butterflies of India are divided into the following families which form very natural and easily recognized groups.

A. Papilionids or Swallowtails, though many are tailless. Large butterflies with all the legs perfect and the hindwings not channelled to receive the body. First come the large black and gold 'Birdwings' to be seen sailing out of reach as a rule in the forests of Ceylon, South and N.-E. India and Burma. Then follow a great variety of tailed black species with wonderful green areas or red and white markings, some with red bodies: yellow and black species: white with delicate markings: black with green or blue stripes and spots: tailless striped species. The 'Kaiser-i-hind', a wonderful green and yellow butterfly found near Darjiling and the hills of Assam and Burma. The 'Bhutan Glory', a many tailed species with a red eye on the hindwing. The peculiar 'Dragontail', resembling a dragonfly in flight. Lastly, the very different 'Snow Apollos', inhabitants of the highest Himalayas; beautiful white insects with black, red or blue spots and furry bodies.

B. Pierids or whites, differing from the last family in having the hindwing channelled to receive the abdomen. The majority are white, such as the well known 'Cabbage White', but many are yellow or even red or blue. There are the 'Brimstones', 'Clouded Yellows' and 'Orange tips'. The 'Emigrant', a large greenish white insect, and the small 'Grass Yellows' are to be seen in every garden. The most variegated belong to the genus *Delias*, the 'Jezabels', the plains member of which is a large white insect with a row of red spots painted along the edge of the hindwing below.

C. Danaids. This and the next 4 families have the forelegs aborted and unfitted for walking. The Danaids are large, tough, leathery insects containing unpalatable juices and are difficult to kill. There are the large 'Tree-nymphs', diaphanous white with large black spots that sail slowly in tropical jungles and mangrove swamps. The 'Tigers', tawny or black striped blue insects that flap about lazily in our gardens. The 'Crows', sombre velvet black butterflies with white spots also found in gardens, many of which in the jungles of N.-E. India and Burma are wonderfully blue shot.

D. The Satyrids or Browns. A considerable group of dull coloured butterflies decorated with rings or eyes, which normally prefer the shade: a few, the 'Walls' of the Himalayas, love rocky, sunny slopes. They vary in size from the little 'Ring' to the large 'Evening Browns' found in the gardens.

E. The Amathusiids. To this family belong the wonderful metallic blue Morpho butterflies of America used for brooches. The Indian species are mostly large insects, sometimes brilliantly coloured, and are only to be found in the densest jungles.

F. The Nymphalids. These are the true sun-lovers amongst butterflies and comprise a large number of handsome species. The well known 'Painted Lady' can be taken as the universal representative, but there is a great diversity of forms. The 'Rajahs' and 'Nawabs' have large strong bodies and can fly like birds: others such as the 'Map butterfly' sail gracefully in the sun and sit flat on damp spots. The wonderful 'Leaf butterfly', the 'Emperors', 'Tortoise shells', 'Admirals' and 'Sailers' are well known. Familiar objects on garden paths are the blue and yellow 'Pansies' and after the first break in the rains the 'Eggfly' with blue-ringed white circles often appears in swarms.

G. The Erycinids. A small family of rather small butterflies allied to the Nymphalids, but the forelegs of the female are fitted for walking. In S. America there are numerous species. One group, the 'Beaks', appear to have long snouts; many of the species are common along jungle paths, where they skip about merrily.

H. The Lycænids or Blues. There is no mistaking a member of this most numerous family of small butterflies. Blue is the prevailing colour, but every other colour is to be found. Many species have tails of either a filamentous type or long and fluffy. There are two main groups—the 'weak' or true Blues, which flutter somewhat delicately and the 'strong' Blues or 'Hairstreaks' with a very rapid flight.

I. The Grypocera or 'Skippers' are a sub-order differing in many respects from the Rhopalocera or true butterflies described above. Only one family, the Hesperiids, occur in India. The Skippers are mostly small insects, rather dull coloured and have a peculiar darting flight. One group sit invariably with the wings quite flat: another often with the hindwings flat and the forewings erect: the majority sit with the wings closed.

#### IV. Transformations.

1. A butterfly starts life as an egg (ovum), whence emerges a caterpillar (larva), in which stage the insect spends its time feeding and growing. When full size the larva changes into a chrysalis

(pupa) and during this apparently dormant stage the wings and other appurtenances of the perfect insect (imago) are evolved. As soon as the transformation has been completed and the season is suitable the butterfly emerges, finds its mate and the cycle starts again when the female has been fertilized and has laid her eggs. The extreme cycle is a year: normally there are 2 cycles, viz., spring or dry season and monsoon, summer or wet season: in some climates, e.g., S. Burma, brood succeeds brood and there may be 4 or even more in the year: a cycle may be only 14 days.

2. With a few notable exceptions (Bell in Kanara, Mackinnon in Mussoorie and Piepers in Java) but little work has been done towards breeding oriental butterflies and the transformations of the majority of species are unknown. Every fully developed living organism is said to climb up its genealogical tree on the way to maturity, so that the importance of studying the early stages are obvious in order to elucidate the complex problems of evolution and classification.

3. The number of eggs laid by a female varies with the species and they may be laid singly or in clutches. The female is very careful to inspect the chosen spot before she lays: it may be a leaf (usually the underside), the bark of a tree, calyx of a flower or for safety sake a twig near the food-plant. The egg is surrounded with an adhesive liquid, which secures it to the leaf, etc. The top of the egg is depressed to a central cavity, called the microphyle, which is an opening through which fertilization takes place. The time passed in the egg stage is variable and is said to be a multiple of 7 days: in the case of some *Lycænids* the winter is passed in the egg stage.

4. The shape of the egg varies considerably and the characteristics of the various groups may be defined as follows:

*Papilionids*. Spherical, broader than high: smooth or minutely pitted: white, green, orange or blotched.

*Pierids*. Cylindrical, twice as high as broad: ribbed: white changing to yellow or orange or blotched.

*Danaids*. Domed, higher than wide: ribbed: white.

*Satyrids* and *Amathusiids*. Domed, as high as wide: covered with minute cells: white.

*Nymphalids* and *Erycinids*. Domed: lower than broad in *Charaxes*, *Euthalia*: higher than broad in the remainder and generally ridged, pitted or knobbed: white. In *Cyrestis* there is a lid through which the larva emerges.

*Lycænids*. Turban shaped or domed: sculptured to small cells: white or pale green.

*Hesperiids*. Domed: smooth or ribbed: white or red.



5. The larva consists of 14 segments, the first of which is the head, joined to the rest of the body by a well-defined neck. On segments 2, 3, 4 are the 3 pairs of true legs which reappear in the butterfly. On segments 7, 8, 9, 10 are 4 pairs of suckers or 'pro-legs' furnished with minute hooks on the soles and at the end of the last segment are the anal pro-legs or claspers. On either side of the body in each of segments 2, 5 to 12 there is a small horny surface called a spiracle, wherein is an opening to the breathing tubes. The 13th segment is often very obscure. The head is furnished with two small antennæ and on either side six minute and rudimentary eyes. The mouth is furnished with a pair of horny, toothed jaws working sideways (mandibles) and a soft lower pair (maxillæ) furnished with a pair of small jointed organs corresponding to the palpi of the butterfly. Near the top of the lower lip is a small orifice, whence issues the silk, which a larva can produce.

6. The colour, markings and clothing of the larva varies considerably and the characteristics of the various groups are as follows :

Papilionids. Spindle shaped, blunt-ended, head large and withdrawable. Furnished with a peculiar organ (osmeterium) behind the head, consisting of a protrusible cylinder dividing into two branches and emitting a pungent smell. Covered with fleshy tubercles in *Troides*, *Tros* and *Chilasa*. Many are covered with spines in the early stages. Usually conspicuously coloured and marked.

Pierids. Cylindrical, smooth, without any processes, but covered usually with hairy-ended tubercles : generally green (red and brown in *Aporia* and *Delias*).

Danaids. Cylindrical, smooth, furnished with 2 to 4 pairs of fleshy tentacles : conspicuously coloured and marked.

Satyrids. Fusiform, surface rough, ending in two tail points : head bifid, often with a pair of horns : generally green.

Amathusiids. Cylindrical, covered sparsely with long thin hairs and sometimes (*Amathusia*) with palmated lateral processes : ending in 2 well-separated tail points : head slightly bifid and often with a pair of horns : brown or green.

Nymphalids. Normally cylindrical, with branched spines : well-separated head and rounded anal end : green or brown (*Cethosia* red and black). *Euthalia* has a smooth green larva furnished with long, laterally extended fleshy feathery processes. *Charaxes* and *Apatura* have smooth green larvæ with horns on the head and more or less prominent tail points. *Cyrestis* has a peculiar naked green larva with long reddish dorsal processes on segments 6 and 12 with a horned head.

Erycinids. *Libythea* has a green Pierid-like larva. In *Abisara* and *Dodona* the larva is also green but Lycænid-like except that the head is not hidden.

Lycænids. Generally woodlouse shape with the head hidden: may be covered or fringed with minute hairs or covered with minute tubercles: mostly green or brown. Many have specialised organs on segments 11 and 12: on 11 there is an orifice that exudes a sweet fluid greedily eaten by ants: on 12 a pair of protrusible pillars, long and permanently protruded in *Curetis*, projecting in the *Spindasis* group. In the majority of the Theclinae the body is centrally constricted. In *Cheritra*, *Rathinda* and *Horaga* the larvæ are furnished with erect fleshy processes.

Hesperiids. Cylindrical, with short legs, without any processes, clothed at most with short, simple or branched hairs: head and neck well-defined. Often live in cells of leaves and only feed at night. Mostly green but conspicuously coloured in the Ismeninae. In *Gangara* the larva is covered with long curly white threads.

7. All butterfly larvæ are vegetable feeders with the exception of a few Lycænids (*Spalgis* and *Liphyra*) which eat coccidæ or scale insects. Some larvæ will eat nothing but a particular plant, others any plant comprised in one or more botanical orders. Some Lycænids (*Virachola* and *Deudoryx*) feed inside the fruit of the guava and pomegranate. Cannibalism is not unusual and the cast egg-shell often forms the first meal.

8. During the larval stage, as the caterpillar grows it casts its skin or moults five times, becoming quiescent for a short period previous to each change on a bed of silk woven on a leaf, etc. When moulting the head skin is cast entire and the skin of the body bursts down the middle of the back along segments 2, 3, 4, the larva walking slowly out, often eating the cast skin. During the first two stages there are often considerable changes in the pattern and clothing. Each stage is called an 'instar'.

9. The time passed in the larval stage depends on the species, the food-plant and the season. The time of greatest activity is when the leaves are sprouting. The growth of the larva is slowest when the leaves are hardest. The larger the butterfly, the slower the growth.

10. When a larva is full-fed, it wanders about for some time searching for a suitable place to pupate: it then spins out a pad of silk, which it grasps with its anal claspers and after a considerable interval the skin splits open disclosing the immature pupa which soon shrinks and hardens to the final shape. Pupæ may be smooth or highly angulated: usually green or brown, sometimes metallic gold. The pupa of a Lycænid (*Spalgis epius*) resembles exactly a



baboon's head. In the Danaids, Satyrids, Amathusiids, Nymphalids and Erycinids, the pupæ hang free from the abdominal end (the cremaster). In the remaining families there is ordinarily a silken girdle round the middle as well. The pupa of *Parnassius* is enclosed in a silken web on a leaf. Lycænid pupæ lie on the ground or on a leaf. Hesperiid pupæ are enclosed in a cell made out of a leaf.

11. The emergence of the butterfly takes place by the splitting of the pupal case. The butterfly hangs on by its legs to the case or walks off to a more convenient position and allows its crinkled up wings to expand and dry. After about half an hour it is ready to fly off and find its mate.

12. Tradition has it that a butterfly lives a day. The more delicate butterflies are to be seen on the wing for a month or even less, but the stronger species live until their wings become too shattered to enable them to avoid enemies or until they have expended all the fat cells produced in the larval stage. I believe that a marked butterfly was found to live for more than a year. Many can hibernate or lie dormant for long periods during any of their transformations.

## V. Structure of the Butterfly.

1. A butterfly's body is divided into 3 sections, connected by narrow links, viz :

(i) The head comprising the eyes, antennæ, proboscis and palpi, corresponding to segment 1 in the larva.

(ii) The thorax, whence spring the legs and wings, corresponding to segments 2, 3, 4 in the larva.

(iii) The abdomen or body consisting of 9 segments, corresponding to segments 5 to 13 in the larva; the 14th larval segment with the anal claspers is represented in the butterfly by the genitalia, which are protruded in many Papilionids and some Pierids.

2. The eyes are large, immovable, compound, consisting of a large number of facets or lenses, each connected to a lens-like cylinder joined to nerves leading to the brain. Usually the eyes are smooth, but may be covered with minute hairs. Their colour is usually brown or golden brown and sometimes red in some Hesperiiids.

3. The antennæ are long, straight, movable feelers projecting from the forehead between the eyes and consisting of a number of segments. Their length varies from  $\frac{1}{2}$  to  $\frac{3}{4}$  of the length of the forewing, gradually thickening to a more or less pronounced club at the end, which in some genera (*Libythea*, *Taractroceræ*) is hollowed

underneath. The club may end in a gradually or (some Hesperiidæ) abruptly formed point or apiculus. In the Hesperiidæ generally the antennæ are bent about the middle of the club, gradually or abruptly and sometimes into a hook.

4. The palpi spring from under the head and curve up in front of the face between the eyes, sometimes separated, sometimes connivent forming a beak, but independently movable. They consist of a short basal joint, a comparatively long central joint and a narrow terminal joint. The first two joints are densely clothed with scales and often with long hairs. The third or terminal joint is naked: it may be blunt or pointed, projected straight or at an angle from the second joint, inside which it may be concealed. The palpi may either be correct, i.e., projecting horizontally or erect, i.e., curved up in front of the face. In addition to the labial palpi described there are present much aborted and very rudimentary upper or maxillary palpi. A butterfly does not eat: during the larval stage it has accumulated an abundant food supply in its abdomen, which it requires to keep moist by sucking up more or less nutritious moisture.

5. The proboscis or haustellum lies curled up between the palpi. It consists of two tubes, united by hooks and separable for cleaning, containing muscles for operating: each tube is inwardly concave, thus forming a central tube, up which moisture is sucked by means of an expanding and contracting sack in the head. In some of the Hesperiidæ the proboscis is very stout and long, e.g., *Gangara*.

6. The thorax is divided into 3 invisibly separated segments. From the first, the prothorax, spring the forelegs: from the second, the metathorax, the forewings and middle pair of legs: from the third, the mesothorax, the hindwings and hindlegs. Between the head and the thorax is a tufted scale called the pronotum, behind which on either side is a large shield-like scale, called the scapula.

7. Each leg commences with the coxa or hip, connected to the femur or thigh by a joint called the trochanter. Then follows the tibia or shank ending in the five-jointed tarsus terminally furnished with a pair of claws, sometimes bifid: between the claws is a cushion called the pulvillus and adjacent to each claw is a brush-like attachment, called the paronychium and used perhaps for cleaning. In the Danaidæ, Satyridæ, Amathusiidæ, Nymphalidæ, Erycinidæ and to a much lesser extent in the Lycænidæ, the forelegs are short, slender and undeveloped, particularly so in the male, where the tarsus consists of a short brush or in Lycænids of a single claw. In the Papilionids and Hesperiidæ the tibia of the foreleg has a spur about the middle and the tibia of the hindleg is furnished with a pair

of movable spurs, or 2 pairs in many Hesperiidæ. The tibiæ may be spiny and sometimes densely fringed.

8. The genitalia are to be found at the end of the abdomen. They can be examined in fresh specimens by squeezing with a pair of tweezers towards the end of the body and thus causing the genitalia to protrude and open out. In the case of dried specimens the abdomen must be relaxed and dissected. The male organ or armature consists of a complicated horny (chitinous) apparatus for clasping the female during copulation. It consists of an upper portion called the tegumen, the end of which (the uncus) is movable downwards. Fixed to the base of the tegumen on either side are the clasps, which are movable inwards and there may be appendages at the base of each clasp. Through the centre of where the clasps and the tegumen are joined passes the penis or œdeagus, to which are attached the two semen bags. The clasps in many Papilionids and Pierids are exposed and in the male of *Armandia* the penis is permanently protruded. The female has a genital plate which is clasped by the male and the semen is received into a container called the bursa. The eggs are passed from the ovaries through the vagina to the ovipositor, being fertilized *en route* with semen discharged from the bursa and entering each egg at the micropyle: simultaneously an adhesive secretion is furnished to the egg through another tube to ensure attachment to the food-plant. The females of *Parnassius* and to a less noticeable extent those of *Pareba* and *Telchinia* have a peculiar horny pouch at the end of the abdomen, which is formed by the discharge from the male during copulation of a fluid which quickly hardens into a shape varying with the species. The females of some species, e.g., *Chatoprocta*, *Tagiades*, are furnished with a dense tuft of short hairs at the end of the abdomen.

9. A butterfly has a complicated brain in the head, whence run two nerve chords, which are swollen into subsidiary brains or ganglia in nearly every segment. Above the other organs on the back is the heart consisting of a tube with a valve at either end opening inwards and causing the blood to keep circulating towards the head. For breathing there is a complicated system of air tubes, air being drawn in from small spiracles at the sides of the body. There is a digestive canal leading to the stomach, which is connected to four very long excretory (Malpighian) tubes. The remainder of the body is occupied by fat cells manufactured during the larval stage.

10. The wings of a butterfly consist of an upper and a lower membrane connected by minute fibres and strengthened by a system of thickened hollow ribs, commonly, though incorrectly, called veins,

The membranes are covered with minute coloured scales with jagged ends or hairs and attached by hooks. The wings are moved by the rapid muscular expansion and contraction of the thorax.

11. The venation or arrangement of the veins or nervules is indicated in the diagram.

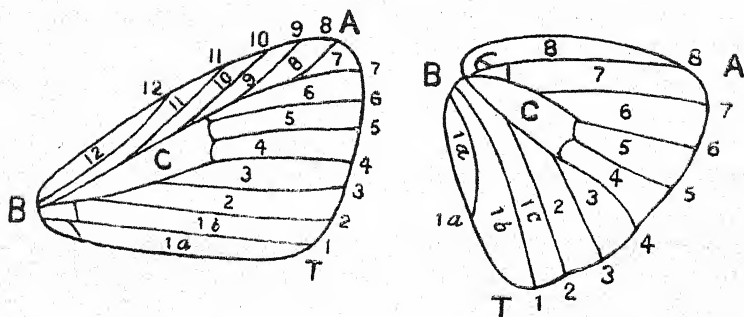


FIG. 1.

(a) B is the base: A the apex: T the tornus or inner angle. AB is the costa or upper margin: AT the termen or outer margin: BT the dorsum or inner margin.

(b) C is the cell, whence spring the majority on the veins numbered 1 to 12 on the forewing and 1 to 8 on the hindwing. The spaces or interspaces between the veins are numbered as shown. The vein bounding the upper margin of the cell from the base to the origin of vein 6 is known as the subcostal vein (scv): that at the end of the cell between the origins of veins 6 and 4 as the discocellular vein (dcv): that bounding the lower margin as the median vein (mv).

(c) On the forewing vein 1a is rarely present: vein I may be forked at the base and there may be a spur connecting vein 1 and the median vein. Vein 8 may be absent and more rarely vein 9, but in the Hespertiids both spring from the cell. Veins 11 and 12 are sometimes anastomosed or fused together. In the majority of the Satyrids and a few of the Nymphalids veins 1, 12 and the median vein are inflated near the base of the wing.

(d) On the hindwing vein 1a is absent in the Papilionids. Vein 5 may be absent or only indicated by a fold in the wing in many Hespertiids. Near the base of vein 8 there may be a short spur, called the precostal vein (pcv) and there may be an enclosed precostal cell.

(e) Towards the end of the cell there are usually some more or less well indicated folds in the wings or veinlets. The discocellular veins on either wing may be absent,

12. The shape of the wings exhibits a great variety. The costa may be straight or highly arched, sometimes concave on the hindwing and occasionally serrate or minutely sawtoothed on the forewing. The apex may be rounded, pointed or falcate, i.e. produced and concave below. The termen is usually more or less convex on the hindwing: on the forewing it is more often straight or even concave: it is often crenulate or dentate, i.e. produced at each vein and concave between. The hindwing is frequently caudate, i.e. tailed at the end of one or more of the veins towards the tornus, which itself is often produced and frequently lobed. Along the termen is a regular fringe, known as the cilia, composed of closely packed scales in a double row, those from the underside projecting slightly. The dorsum is normally straight, but may be concave or convex.

13. The colour and markings of the wing present an infinite variety often difficult to describe or to reproduce. The colour is sometimes changeable according to the incidence of the light. Markings parallel to the veins are called longitudinal, those at right angles transverse. Markings internal to the centre of the cell are basal, about the centre of the cell sub-basal and at the end of the cell central. The area between the end of the cell and the termen is called the disc and markings described as pre-discal, discal, post-discal, subterminal or submarginal and terminal or marginal. The terms apical, sub-apical, costal, dorsal, anal, etc. are self-explanatory. Markings may consist of spots, solid or annular, i.e. just a ring: a common form is an eye or ocellus with one or two (geminate) pupils, perhaps surrounded by an iris. Bands or fasciæ may be solid or macular, i.e. broken into spots or catenulated, i.e. a chain of rings. Lines may be continuous or lunulate or lunular, i.e. formed of connected crescents. The wings may be striated, i.e. covered with fine lines or strigæ.

14. The males of many species are furnished with what are called secondary sexual characters, consisting of scent-producing organs, brushes and brands or pouches of specialized scales, needed presumably to enable a female to satisfy herself that she is mating with her own species. A summary of the characters may prove of interest: they are often associated with the displacement or distortion of some of the veins or the dorsum of the forewing may be bowed.

(a) Certain Papilionids (*Troides*, *Tros*) have the dorsum of the hindwing folded over to contain what looks like fluff. One species (*protenor*) has a white brand on the hindwing.

(b) Very few Pierids display characters: brands occur in one *Colias* and some *Terias* and *Colotis*: *Appias* have a tuft of hairs on either side of the abdomen.



(c) All Danaids are furnished with two (four in *Hestia*) extrudable brushes at the end of the abdomen and many *Dapais* have a brand or a pouch on the hindwing which it is believed can be stroked by the brushes. Many *Euplaeus* have one or two brands on the forewing and often a yellow or brown patch on the hindwing above.

(d) Most Satyrids have characters. Most *Mycalesis* and *Elymnias* have an erectile tuft of hairs overlying a brand on the hindwing above correlated to a brand on the forewing below. One *Mycalesis* has in addition a recumbent tuft on the hindwing, others a tuft overlying a groove on the forewing above and one has a brand near the tornus of the hindwing. Many of the Palearctic genera (*Pararge*, etc.) and some *Lethes* have on the forewing brands consisting of whip-like scales ending in tassels. Some *Maniola* have a peculiar brush inside the abdomen internal to the genitalia, called the 'Julian' organ.

(e) Nearly all the Amathusiids have characters, which attain their greatest development in a *Zeuxidia*, which has 4 brushes, or hair pencils on the hindwing overlying brands, a brush on either side of the abdomen and a brand on the underside of the forewing.

(f) Very few Nymphalids and no Erycinids have characters. Certain *Argynnis* and *Cirrochrous* have glandular streaks along the veins above and *Ergolis* has a large black area on the forewing below. The scales in *Argynnis* are tasselled, in *Ergolis* peculiarly forked.

(g) Lycænids display a variety of characters. The Poritiinæ have a tuft on the hindwing: the Gerydinæ a brand or thickened vein on the forewing. Lycæninæ have no visible characters but most of the blue species have tiny androconial scales scattered on the forewing, mostly battledore shaped, traversed by ribs swollen into glands at intervals. Some species of the *Thecla* group have a brand in the cell of the forewing: The *Curetis* and *Amblypodia* groups have no characters, but in the remainder of the Theclinae a brand on the hindwing correlated with a tuft on the underside of the forewing is frequent as well as patches of modified scales on the forewing above.

(h) Hesperiidæ have various characters. Many of the Ismeninæ have brands or patches on the forewing or streaks along the veins: the scales in some *Ismene* are most peculiar, rather like tennis rackets. The Celænorrhinæ and Hesperinæ do not have characters on the wings, other than the costa of the forewing being folded over near the base in some species: but most species have a pencil of hairs on the hind tibiae, some on the mid tibiae as well and one or two on the fore coxae: an *Odontoptilum* has tufts at the end of the thoracic scapulae fitting into grooves on the hindwing: a *Carcharodus* has a thick tuft of hairs on the underside of the

forewing. Brands or stigmas are frequent in the Heteropterinae and even more so in the Pamphilinae, as well as patches of modified scales and tufts or pencils of hairs: *Cupitha* has a peculiar gland on the hindwing, whence a wax-like substance oozes: *Ge* has a curious circular tuft on the forewing.

## VI. Senses and Habits.

1. We have five senses—seeing, hearing, smelling, tasting and feeling: for the first two we have eyes and ears: for the next two sense organs in our mouths and noses: for feeling our general nervous system reacts to direct and more or less to indirect pressures or stimuli. The habits and general outlook of an insect in respect of feeding, avoidance of enemies and carrying out its life cycle differ so entirely from our own, that it is difficult to ascertain what senses it requires or possesses. By a careful study of their habits and enemies and a detailed examination of their structure, it is possible to come to certain more or less satisfactory conclusions.

2. Research work has shown that a butterfly is furnished with a complicated but not particularly efficient eye: it sees only a mosaic of indifferent definition at a range of even two inches and a mere blur at three feet, while there is nothing to show that it is not colourblind: it appears, however, able to distinguish unusual movement at a considerable range, though possibly not with its eyes. A few moths have ears, as we know them, at the sides of their bodies, but all trace of such organs have disappeared in the butterfly and since no butterfly can make a noise, organs for hearing would seem unnecessary. Butterflies can certainly smell for two distinct purposes. They are attracted to flowers, which emit a scent with the deliberate purpose of attracting insects in order to become fertilized: they are attracted to rotting fruit or flesh, ordure, sap from trees and even rum or beer: scent is required to secure food. Many males have a scent producing apparatus, the scent from which is in some cases recognizable by human noses: the purposes of such scent is for sex attraction and the female at least can distinguish the scent. The female can unfailingly distinguish the foodplant for her brood and the male has the same power, perhaps because he is likely to find his mate nearby. There are organs at the end of the proboscis which it is reasonable to assume are used for tasting. A butterfly is provided with a nervous system enabling him to respond to such stimuli as are applicable.

3. Examination has shown that the antennae contain four different types of organs. Also in a pit at the base of the palpi, to which there is only a very narrow opening, there are a number of sense cells carefully protected from direct contact with solids. Thus there

are five sets of organs, the use of which we can only surmise. Two in the antennæ are perhaps for smelling, one for food and the other for the opposite sex, leaving three unaccounted for.

4. Now a butterfly can hustle through a forest at lightning speed without touching a twig, but if deprived of its antennæ it loses all control. It is reasonable therefore to assume that the insect has an acute sense of mass, possessed to some extent by blind people, and that the sense cells for the purpose are contained in the antennæ.

5. In the case of certain moths a male can fly direct to a freshly-emerged female from a range up to 2 miles. Scent was believed to be the attraction, but not only has a female no scent apparatus, but dissemination to such a distance must be regarded as impossible. The very plausible theory has been advanced that intercommunication is effected by the transmission and reception of ether waves, such as constitute light, have been discovered in the case of wireless, X-rays, etc. and doubtless others await discovery. The theory accounts for the light on the glow-worm and firefly as waves to the mate and also for moths being attracted to light. This form of attraction is not noticeable in butterflies, but the necessary apparatus may very well be present and it may be surmised perhaps that the sending cells are contained in the antennæ and the receiving cells in the palpi.

6. Migration is an instinct possessed by certain butterflies and has been observed in various parts of India. The available records for Ceylon and S. India were summarized by Mr. C. B. Williams in Trans. Ent. Soc. 1927. In the Palni Hills 21 species of Papilionids, Pierids, Danaiids and Nymphalids migrate Southwards in the Autumn: certain Pierids (*Catopsilia* and *Appias*) Northwards in the Spring: and a Lycaenid (*Lampides boeticus*) North-east also in the Spring. In Ceylon 69 species migrate in the Spring and again in the Autumn mostly from the North of the Island. In N.-W. India *Vanessa cardui* and *Lampides boeticus* have frequently been observed migrating in the Spring and generally butterflies are often met with proceeding in a definite direction. Butterflies are often seen far out to sea. The reasons for these movements are unknown: with locusts the reason is shortage of food: with butterflies it may be the desire to enlarge their sphere.

## VII. Protection from Enemies.

1. Throughout nature a perpetual war is waged by the strong and cunning on the weak and unsuspecting. This is the inevitable counterpart of nature's system of reproduction whereby in the case of butterflies the eggs laid by a female are far in excess of those



required to carry on the species at normal strength. The destruction of the surplus is necessary to maintain the balance of nature. The butterfly belongs to the weak and unsuspecting class, but has devised various means of protection against its numerous enemies.

2. In the egg stage the only protection is concealment and assimilation to the surroundings. Cockroaches devour any eggs they find greedily. Tiny flies lay their own eggs inside a butterfly's egg and there emerges a fly instead of a caterpillar.

3. In the caterpillar stage there are many enemies, birds perhaps being the most effective. There are also many insects, such as ichneumon flies, who lay their eggs inside the caterpillar, which turns into a chrysalis as usual, but a fly emerges in due course instead of a butterfly. For protection the caterpillar practises concealment by its colouring, by hiding inside leaves or by only feeding at night and it can curl up and drop to the ground in an emergency. Many caterpillars are armed with spines, some can emit nasty juices, others can wave about fearsome looking processes and some look fearsome when they raise their heads.

4. Certain *Lycenid* larvæ have evolved a curious system of protection in conjunction with ants. The ants tend and protect the larvæ receiving in return sweet juices which are emitted from glands on the larvæ. In some cases the larva when nearly full grown, is taken away by the ants to their nest, where the completion of its feeding is undertaken by the ants and it can pupate at leisure emerging as a butterfly direct from the nest.

5. In the pupal stage the casualties are probably fewer than during the other stages. Protection is provided by the hard case, concealment and adaptation to the surroundings. One *Hesperiid* (*Gangara thyrsis*) can make a rattling and hissing noise, when disturbed.

6. In the imago stage the principal enemies are lizards, mantids, spiders and birds to a minor extent. Apart from the powers of observation and flight various methods of protection have been evolved, viz. adaptation to surroundings when at rest, deception as to the position of the vital parts, unpalatable juices accompanied often by conspicuous colours as a warning and mimicry in various forms.

7. Most butterflies sit with their wings closed, displaying only the underside, which is generally coloured and marked to resemble the surroundings. Many have an intricate or 'cryptic' pattern, harmonising with the vegetation: others have an underside indistinguishable from a leaf, the best examples being the Oakleaf butterfly (*Kallima inachus*) and the dry season forms of the genera *Mycalopsis* and *Precis*.

8. Many butterflies, particularly Lycænids, are furnished with a tail to each hindwing above the origin of which on the underside is a marking resembling an eye. When the insect sits with its wings closed the tails combined with the eyes resemble the head complete with antennæ. The enemy, usually a lizard, makes his dart and comes away with only a mouthful of wing. It is very usual to come across butterflies with the hindwings cut clean in this manner.

9. All Danaids, Papilionids of the genus *Tros* as well as various other butterflies are protected by the possession of unpalatable body juices, which once an enemy has sampled he will never try again. The colouring in such cases is usually conspicuous so that the enemy is warned not to attack. Butterflies of other species, which do not possess unpalatable juices, have in some cases mimicked or developed the same wing pattern, so as to appear unpalatable. The more conspicuous examples of this form of mimicry, known as 'Batesian', after the propounder of the theory, are: the females of *Hypolimnias misippus*, *Elymnias hypermnestra* and *Argynnis hyperbius*, which all mimic *Danaïs chrysippus*, differing very greatly from their own males: various species of the genera *Elymnias* and *Chilasa* which resemble Danaids: the females of *Papilio polytes* which in two of their forms resemble *Tros aristolochia* and *hector*: *Prioneris sita* which resembles *Delias eucharis*.

10. There is another form of mimicry known as 'Mullerian', the theory of which is that even though the members of a particular genus may be unpalatable, it is advantageous for them to look alike, since one experiment on the part of the enemy will warn him off in future and so the casualties will be less than if he had to experiment on every species. The outstanding example is the genus *Euplœa* where all the species bear a close resemblance to one another.

11. The development of protective measures is more marked in the female than in the male, since in the scheme of nature the survival of the female is of greater importance. The male lives only to fertilise the female, but the latter has to lay her eggs. Apart from the development in accordance with the theories of mimicry, the females in most groups are generally less conspicuously coloured than the males: for instance the males of the majority of the Lycænids are blue above and the females brown and no female has attained the wonderful metallic green colours possessed by the males of many of the *Theclas* and *Amblypodias*.

### VIII. Variation.

1. The study of variation and the causes thereof forms perhaps the most interesting branch of entomology: herein lies the secret

of evolution and butterflies constitute the best subject for the purpose. Variation occurs in several forms, viz. sexual, individual, seasonal and geographical.

2. Sexual variation has been referred to in the last section. In many species the sexes are indistinguishable except by an examination of the genitalia or in certain groups of the forelegs. In many there is a marked difference, whereas sometimes it is difficult to believe that the males and females belong to the same species.

2. Individual variation is to be found in three forms, viz. differences of a more or less marked nature which can be linked together in a long series by intergradations: polymorphism, where the species occurs in 2 or more quite distinct forms: the aberration or sport, where a single individual occurs in a markedly different form to the normal.

3. Individual variation may arise from a number of causes; different nutrition in the larval stage, effect of light or temperature changes or accidents. In some species the variation is extraordinary: for instance the underside of no two Oakleaf butterflies (*Kallima*) or of the dry season forms in the genera *Mycalesis* or *Melanitis* are alike, while the variation between individuals of the Common Grass-yellow (*Terias*) is very pronounced.

4. Polymorphism is infrequent. The best known examples are the females of *Papilio polytes* and *memnon*, which are trimorphic in certain areas: *Chilasa clytia* and *paradoxus*, which are dimorphic in both sexes: the females of *Euripus halitherses*, which are definitely dimorphic, each form being highly variable as well. *Danais chrysippus* is trimorphic in Africa: in India it is monomorphic but examples of the other two forms occur sporadically and it is interesting to note that its mimic, the female of *Hypolimnais misippus*, follows suit.

5. Aberrations are rare but are of great interest and occur not infrequently in some species. A good example is the Lycænid *Artipe eryx*, where the underside is occasionally yellow instead of green. *Papilio polytes* in the male not infrequently produces curious aberrations, two of which have been named as species. It is this class of variation that is employed by expert gardeners for producing new varieties, which by careful breeding can be fixed and will breed true in accordance with Mendel's law. But man has not yet been able, I believe, to produce definite species: the most highly specialised flower, pigeon or dog will revert to the natural form if allowed to run wild. The 'sport' may be a throw-back or a throw-forward: in nature it starts as a recessive, but gets swamped by the dominant form very quickly. According to one theory of evolution it is by means of sports that new species are formed, i.e. by sudden jumps

in contradistinction to Darwin's theory of 'little by little'. The eventual truth may be found to lie between the two theories, in varying proportions.

6. Gynandromorphs, i.e. butterflies partly male and partly female are very rarely to be found. Monsters with two heads or three antennæ are not unknown. Asymmetry, i.e. one side different to the other is rare, but in a few species of Hesperids the clasps of the genitalia are constantly asymmetric. Hybrids in nature are extremely rare.

7. Seasonal variation is most marked in certain Indian butterflies particularly in the areas affected by the S.-W. monsoon and is doubtless due in part to the effect of the climate on the larva and pupa and in part to the very different state of the vegetation the larvæ feeds on. In some species it is likely that the characteristic has been inherited from bygone days and persists though the original causes may have disappeared. In the Himalayas most butterflies have two broods, spring and summer and the differences are more or less well marked: *Vanessa egea* is a good example. In the rest of India butterflies occur all the year round since life is never completely dormant as it is in the Himalayan winter. In some species, e.g. *Terias*, brood succeeds brood and the extreme dry season form though very different to the extreme wet season form can be interconnected by intermediate forms. But in many species there are two sharply differentiated broods: outstanding examples occur in the species of *Melanitis* and *Mycalesis*, where the underside of the dry season form is like a dead leaf and of the wet season form striated and ocellated: other good examples are members of the genera *Ypthima* and *Junonia*, a few *Lycænids* and one or two Hesperids.

8. Geographical variation presents a very fertile field for investigation and one day we may be able to correlate the observable changes in the butterfly with the differences in climate, food plants, etc. In migratory species such as *Catopsilia*, *Vanessa cardui*, *Lampides bœticus*, etc., as might be expected geographical variation is absent. It is in species confined to forest areas, separated from each other by impassable deserts, cultivated areas, high mountains or sea, that the variation is observable. But apart from that there appear to be definite faunistic boundaries, dependent perhaps on elevation, climate or vegetation.

9. So long as conditions are suitable a species will extend its sphere to the possible limits. Gradually conditions change and the sphere occupied by a species may become divided into areas separated from one another by zones where the butterfly cannot exist. The climate and vegetation of one of the separated areas

may change and the butterfly will also change, either by bounds or little by little conformably with changes in the area, so that its appearance, structure or habits diverge more and more from the original form. Further changes may cause the separated area to become once more united with an area where the original species still exists though probably in a modified form. The two forms of what were the same species may find that they are able to interbreed freely, when either one form will completely swamp the other: or there may remain a neutral area on either side of which one form is dominant: or they may carry on as dimorphs. The two forms may find interbreeding impossible and must then be regarded as constituting two independent species and will always remain so, though they will develop on parallel lines and may in course of time resemble one another exactly and inhabit identical areas.

10. *Papilio memnon* affords an interesting study. It flies from Sikkim to Malayana: the male is more or less uniformly dark and tailless: there are three quite distinct forms of female, one of which is tailed and looks quite different to the male. In South India, and in a slightly modified form in Ceylon, there flies a closely allied species, *Papilio polymnestor*, which is tailless, has the sexes nearly alike, differing from the male of *memnon* in having a broad blue band above. The two species meet in the lowlands of Sikkim, whence aberrations of *memnon* have been obtained showing a resemblance to *polymnestor*. The inference is that they can interbreed, probably with difficulty, but each retains its dominance in its own area and their border line is probably defined by the change in food plant, preventing penetration into each other's areas. In the Andamans there flies the closely allied *mayo*, which has a male resembling *polymnestor* and an entirely different female resembling the tailed female of *memnon*.

11. There are several genera, e.g. *Padraona*, *Nacaduba*, *Mycalesis*, where the species are so alike that they can only be separated by a careful examination of the genitalia. The same *Zizyphus* bush will have thereon sometimes as many as three quite separate, but superficially indistinguishable, species of the genus *Taracus*, a discovery made by Mr. G. T. Bethune-Baker, at which I regret to say I scoffed in the days of my ignorant youth. Such would appear to be cases of the original separation of a species, coming together again as separate species followed by convergent development.

## IX. Distribution.

1. Except for the circum-polar areas butterflies are to be found all over the world, which for purposes of scientific study is divided



into five regions, as follows, each region being further divided and subdivided as found convenient.

(i) Palæarctic region comprising all Europe extending from the Mediterranean littoral of North Africa to the Northern portion of North America and embracing Western, Central and Northern Asia.

(ii) Oriental region comprising India proper, East of the hills bordering the North-West Frontier and South of the Himalayas, Burma, Southern China and extending Eastwards to include the Philippines, Celebes and Flores.

(iii) Australian region comprising the Moluccas, New Guinea, Australia and the Far East.

(iv) Ethiopian region comprising Africa South of the Sahara.

(v) American region comprising South America and the Southern portion of North America.

2. In the Indian Empire we are not concerned with the last three regions though there are well defined affinities particularly with Africa. India lies at the meeting point between the Palæarctic and Oriental regions and may be regarded as falling into the following divisions :

(a) Ceylon, closely allied to South India, but being an island it has a number of forms peculiar to itself, some of which are related to the Malaysian subregion.

(b) South India, a very old country geologically, embracing the entire Madras and Bombay presidencies and extending throughout the plains of India. Curiously enough 2 or 3 palæarctic species are to be found in the S. India hills. Generally speaking the butterflies are nearly allied to those of the Malaysian subregion, but there are a number of species peculiar to the area.

(c) Baluchistan appertains to the palæarctic region, except for the plains of Sibi, which form part of the preceding division. The affinities are Persian. The division may be regarded as reaching Northwards to the Safed Koh.

(d) Chitral appertains primarily to the Central Asian section of the palæarctic region with a strong infiltration from the Himalayas. The division extends to Hunza, Baltistan, Ladak.

(e) Western Himalayas extending from Kashmir to Kumaon. This is a somewhat bastard division, part palæarctic, particularly the inner ranges and part oriental due to infiltration from the S. India and N.-E. India divisions. The affinities on the palæarctic side are Chinese and Central Asian.

(f) North-East India, extending from Sikkim through Assam to North Burma up to the Shan States. This is one of the most

interesting and richest areas in the world. The Central Asian and Chinese divisions of the palaearctic region here meet the South Indian and Malaysian divisions of the oriental region. It constitutes a portion of the Indo-Chinese subregion of the Oriental region. It is also in respect of the Brahmaputra valley a country in the making and variation has literally run riot.

(g) South Burma from the Karen Hills to Victoria Point divisible into 4 subdivisions, the Karen Hills, the Dawns and the Ataran Valley, Tavoy and Mergui and the extreme South (Lenya Valley). The accepted border between the Indo-Chinese and Malaysian subregions runs through Victoria Point.

(h) Andamans and Nicobars. The Andamans fall within the Indo-Chinese subregion and show a close relation thereto, though being separated islands many of the forms are much modified. The Nicobars fall within the Malaysian subregion exhibiting a close affinity with Sumatra.

3. The table below shows how the species in the various families are distributed between the divisions enumerated above.

Family	Ceylon	South India	Baluchistan	Chitral	W. Himalayas	N. E. India	S. Burma	Andamans and Nicobars	Total
A. Papilionidæ..	15	19	6	11	31	69	50	13	90
B. Pieridæ ...	29	34	26	30	42	57	40	20	98
C. Danaidæ ...	12	11	4	3	8	21	29	21	38
D. Satyridæ ...	16	31	18	28	56	120	55	9	184
E. Amathusiidæ	1	3	...	...	...	17	16	2	26
F. Nymphalidæ.	37	51	17	33	86	179	137	42	232
G. Erycinidæ ...	3	3	...	2	9	19	19	1	25
H. Lycaenidæ ...	80	89	34	45	122	269	253	67	438
I. Hesperiidæ ...	45	74	14	14	63	211	189	42	307
Total ...	238	315	119	166	417	962	788	217	1,438

## X. Classification.

1. The object of classification is to arrange the material available in the most convenient order possible for study and reference. The natural system of classification should follow the order of evolution, but since we are ignorant as to how that has taken place and have no fossils to guide us, and since any order we adopt must be a linear one, while evolution acts in all directions, sometimes diverging sometimes converging, it will be seen that classification is no easy matter. The system now in vogue is to a great extent arbitrary, but is more or less satisfactory.

2. The species is the basis of classification, but what constitutes a species is not easy to define. Whenever two forms, however closely resembling one another, fly together and do not interbreed they are regarded as species and their identity as such is capable of proof by an examination of their genitalia. Where two similar forms do not fly together, it is often a matter of opinion whether they are conspecific, i.e. capable of interbreeding and therefore races or subspecies, or whether they are true species. Usually if there is no essential structural difference, it is more convenient to link together as species similar forms from different areas.

3. A number of allied species are grouped together into a genus. The conception of a genus varies with every Naturalist: some lump large numbers of allied species into a single genus: others treat the slightest structural difference as justifying generic separation. Though in the case of a species a determining line can more or less be laid down, in the case of genera this cannot be done and a character that appears important in one group breaks down in another. It is preferable to disregard minutiae and to group obviously allied species into a genus, however large, and to divide it as may be convenient into subgenera or groups: where a subgenus constitutes a good natural group, it may be more convenient to treat it as a genus.

4. Genera are grouped into families which are now well defined and have been summarized in Section III. For convenience the families may be subdivided into subfamilies or groups.

5. Every species is known by two latin names, the first indicating the genus and the second the species: for instance *Papilio machaon* designates the Common Yellow Swallowtail. To designate the subspecies or geographical race the binomial system of Linnæus is expanded to the trinomial: for instance *Papilio machaon machaon* is the 'nymotypical' or first described race from Europe: *Papilio machaon asiatica* is the subsequently described race from the N.-W. Himalayas.



•5. Varieties, dimorphs, aberrations and seasonal forms are designated by an additional name with an abbreviated prefix. For instance v or var for variety: d or dim for dimorph: ab for aberration: DSF and WSF for dry and wet season forms or f vern and f aest for spring and summer forms or Gen I, Gen II, etc. for successive generations in the year. If the variety, etc. only applies to one sex the sex sign ♂ for male and ♀ for female is placed before the abbreviation. At the end of the Latin name it is usual to add the name in an abbreviated form of the person who gave the name; the principal authors concerned are:

Atk=Atkinson. Alph=Alpheraky. BB=Bethune Baker. Blanch=Blanchard. But=Butler. Bdv=Boisduval. Brem=Bremier. Cr=Cramer. Chp=Chapman. DeN=DeNiceville. Db=Doubleday. Doh=Doherty. Dist=Distant. Dal=Dalman. Dry=Drury. Esp=Esper. El & Ed=Elwes & Edwards. Evers=Eversman. Fd=Felder. F or Fab=Fabricius. Fruh=Fruhstorfer. GrS=Gröse Smith. GG=Groum Groumshailo. G & S=Godman & Salvin. Hub=Hubner. Hew=Hewitson. Joh=Johansen. Jord=Jordan. Koll=Kollar. L=Linnæus. Lat=Latreille. Led=Lederer. M=Moore. Men=Menetries. Mab=Mabille. Ob=Oberthur. Pl=Plotz. Ril=Riley. Roth=Rothschild. Stg=Staudinger. Swin=Swinhoe. Tyt=Tytler. WM=Wood Mason. Wd=Westwood.

•6. Collectors have noticed, not without irritation, that the names of butterflies, with which they had become familiar, get changed not infrequently. This is done for two reasons, viz. increase in knowledge or the application of what is called the law of priority. It may be found that what an author described is a different to the insect that has generally been accepted as such or it may be found that more than one species has passed under the same name. It may become necessary to divide up a genus or a species into two or more genera or species.

•7. The object of the law of priority is to give the credit for a name to the earliest author, to avoid using a name for a species again in the same genus, and in the case of a genus to avoid repeating the name throughout the realm of Zoology: well defined rules have been laid down by the International Zoological Congress. The older authors were often indefinite regarding their descriptions and localities: figures were crude or not published: type specimens got lost; descriptions covered several species: type species of genera were not designated. The result was that more than one author named the same species: genera were split up or used in different ways: a name used was found to have already been employed. The past is being gradually cleared up

and stability is being reached. For the future it is as well to leave the coining of new names to the specialist who takes care to follow the somewhat complex rules and to lodge the type species in a recognized museum. Discarded names are called synonyms.

8. Trivial or English names were first used for Indian butterflies in the first edition of this book and are repeated in this edition.

## XI. Identification.

1. The simplest way to get a butterfly identified is to send it to an expert. Or the specimen may be compared with those in a named collection or with figures in one of the various text books. Accommodating experts are few and far between, museums are out of reach of many collectors, while the larger text books containing an illustration of every butterfly are very expensive. Only a superficial and entirely unreliable knowledge of the subject can be obtained by such means. The serious collector must study the subject and make it his business to understand the structure of the insects he is interested in and the system of classification in vogue. It is for the serious collector that this book has been written and that it serves its purpose is indicated by the list commenced in vol. xxxiv of the *Journal of the Butterflies of Coorg* by Mr. J. A. Yates, who had no previous knowledge of the subject in 1927 and no other guide than the first edition of this book.

2. The Keys to Identification have been compiled on the following principles:

(a) The 9 families are lettered A to I, thus A. Papilionidæ and the family key will be found after the Introduction and Glossary.

(b) Each genus in a family is given a number following the family letter, thus A. 4. *Papilio*. A key to the genera in each family is given at the commencement of the section dealing with the family.

(c) Each species is given a second number after the generic number, thus A. 4. 29. *Papilio machaon*. A key is given for all the species in each genus and the various races under each species are designated by Greek letters, thus A. 4. 29. β. *Papilio machaon asiatica*.

(d) Turn to the key for A. 4. *Papilio* and consider the identification of *Papilio machaon* which is figured on Plate V in the centre of the first row. The key starts with 1a (6a) and it will be seen that the subsequent description does not apply to the butterfly under consideration, so run straight on to 6a (1a) which does apply. Then follow on to the next line 6b (8a, 27a): this does not apply, so run on to 8a (6b, 27a): this does not apply, so run on to 27a (6b, 8a) which does apply. Then follow on to the next line 27 (28a):

this does not apply, so run on to 28a (27) which does apply. Then follow on to the next line 28 (29a): this does not apply, so run on to 29a (28), which does apply. Then follow on to the next line 29 (30) and as that applies, we have arrived at *Papilio machaon*.

(e) The system of numbering and lettering was introduced in the original keys to identification, which were first published in the Society's *Journal* and later produced in book form as the first edition of this book. For reference purposes it is desirable to number genera and species and if the numbering is to be preserved in the keys, then it becomes necessary to use suffix letters leading up to the plain number for the species. Once understood the system is simple and saves space as compared with other key systems. The abbreviations originally used have been repeated and a key to them will be found in the Glossary: by their use a great deal of space has been saved.

(f) After the name of the butterfly there follows the abbreviated name of the author (see Section X. 5) and then in brackets the expanse of the butterfly in millimetres, obtained by measuring from the centre of the thorax (the pin) to the tip of the forewing and doubling the result: a more modern method is to give the length of the forewing from the base to the apex. After the expanse comes the trivial or English name: then the locality, followed by a capital letter—C for Common, R for rare, etc.: finally in brackets the synonyms or names either given in error or designating some unimportant variety, which may assist a student in studying other books.

(g) The Index has been arranged by families, the numbers referring to the numbers in the keys. An index of trivial names is given.

(h) The Plates bear under each figure the number in the keys, where a star precedes every butterfly figured.

3. A simple method of using the book is as follows. Compare the butterfly to be identified with the figures in the plates and select the figure most nearly corresponding. Note the number below the figure and turn to the corresponding number in the text. Note the species next above and below that are starred and look at their figures: then study the key between the stars. For instance assume that C. 2. 5 on Plate X fits the specimen best: numbers 2 and 6 are starred but are obviously not the species, nor is 3 which is allied to 2 and it lies between 4 and 5. If number 4 does not fit then it must be number 5 and the particular race of *Danaïs tytia* can be decided as much by the description as the locality. But if the locality is inapplicable, i.e., for a Ceylon butterfly, a mistake has occurred and you must try again.

4. For examining the structure of the butterfly, it is necessary to have a hand coddington lens of 16 to 20 diameters magnification. To examine the veins dip a small paint brush in pure petrol and touch the wing until the petrol has run all over it. Examine the legs, antennæ, eyes and palpi. Check out known specimens with the family, genera and species keys. Squeeze out the abdomen of a fresh specimen with a pair of tweezers to examine the genitalia: in the case of a dried specimen it is necessary to relax the abdomen and to dissect it under a dissecting microscope. The sex can often be determined by brushing the end of the abdomen with a stiff brush. To examine the scales a high power microscope with  $\frac{2}{3}$  and  $\frac{1}{2}$  objectives is needed: lightly scratch the wing (disc of forewing is best) with a needle, draw the needle across the wing flat with a slight twisting motion; then tap the needle on to the slide depositing a tiny bundle of scales.

5. It will greatly assist the collector to make from the book a local list for the area he is collecting in and then to study the plates and descriptions. Time will not be wasted then in wading through descriptions of butterflies not occurring in the area. The designations Common, Rare, etc. have been assigned as the result of long experience, but a butterfly may be very common in one area and very rare in another, rare some years, common others or perhaps only to be found commonly for a very short period in a very restricted locality.

6. The more important books published on Indian butterflies are:

(a) *The Butterflies of India, Burma and Ceylon* by Marshall and DeNiceville: 1882-1890: 3 volumes dealing with all but the Papilionids, Pierids and Hesperiiids. The descriptions and local notes have never been equalled. Out of print.

(b) *Lepidoptera Indica* by Moore and Swinhoe: 1890-1913: 10 volumes complete. Contains a complete description and coloured figure of every butterfly. Obtainable for about £90 from Lovell, Reeve & Co., London.

(c) *Fauna of India Series—Butterflies* by Bingham: 1905-1907: 2 volumes dealing with all but half the Lycænids and the Hesperiiids. Contains a complete description of every butterfly, a large number of woodcuts and a few coloured plates. Out of print.

(d) *The Macrolepidoptera of the World* by Seitz: 1906-1928: issued in parts, complete. Contains a brief description and a coloured figure of every species. The Palæarctic section of 380 pages and 89 plates costs £8 10s. but the price includes the volumes on moths which must be taken as well. The Indo-Australian Section

of 1,197 pages and 178 plates costs £18. Obtainable from Watkins & Doncaster, 36 Strand, London. A supplement to the Palæarctic Section is now being published.

(e) *Butterflies of India* by Antram: 1924: one volume containing a description and an uncoloured figure of every butterfly, but omitting the Lycæniids and Hesperiiids as well as the butterflies of Ceylon, Burma, Baluchistan, Chitral, Andaman and Nicobar Islands. Obtainable from Thacker Spink & Co., Calcutta, for Rs. 30.

7. Collections of Butterflies from India are maintained at the following institutions, all of which would be glad to receive specimens from the lesser known localities.

(a) The Prince of Wales' Museum, Bombay, under the supervision of the Bombay Natural History Society.

(b) The Indian Museum, Calcutta, wherein is housed the very important DeNiceville collection.

(c) The Forest Research Institute, Dehra Dun.

(d) The Agricultural Institute, Pusa.

(e) The British Museum (Natural History), Cromwell Road, which contains the best preserved and most complete collections in the world of Indian, etc. butterflies. In order to see the study collections, application should be made at the entrance for Captain N. D. Riley, Assistant keeper of Entomology, who is in charge of the Butterflies.

(f) The Madras and Colombo Museums.

## XII. Collecting.

1. By breeding butterflies the most perfect specimens are to be obtained. Watch a female laying to obtain eggs. Beat bushes holding an umbrella underneath to obtain caterpillars. Airy cages are needed covered with mosquito netting, furnished with fresh food from the correct food plant and kept scrupulously clean. When the butterfly is full grown it should have available a sloping stick, preferably cut from its food plant, whereon to pupate and there should be a similar stick available for the freshly emerged imago to cling to in order to dry out its wings.

2. The simplest form of net consists of a tin Y piece with a bent cane, carrying the net, fitting into the forks and a 6 foot bamboo into the stalk: the opening should be 20 to 24 inches and the net 36 inches long made of 'leno', mosquito netting or 'voile', which is less tearable, of any colour, though green or khaki are the most fashionable. The balloon collapsible net sold by dealers (Army & Navy Stores, Lawrence & Mayo, Watkins & Doncaster, etc.), is a good strong pattern that can be used for beating for larvæ. I have lately used a folding hoop iron net made by the Kny-Scherer



Corporation of America, Dept. Nat. Science, 50-58 West 22nd Street New York: net No. NS 841, costing 2 dollars.

3. To catch a butterfly make a rapid sideways stroke, following through as at golf and then twist the net so that it folds over the frame. Wait if possible until the butterfly is in a catchable mood or position and see that the end of your stroke does not land into a prickly bush. Some butterflies sit very tight on the ground and it may be better to flop the net over them, then holding up the bag and twisting the net when the butterfly has flown up.

4. The butterfly should be killed as soon as possible to prevent it damaging itself. The simplest method is to get the insect into a fold of the net with its wings closed and then to pinch the thorax lightly but sufficiently in ordinary cases, very severely for a *Danaiid*. Many people use a killing bottle with a wide mouth containing at the bottom a paste made with cyanide of potassium. The cyanide bottle is a nuisance to carry and is apt to discolour some butterflies, but it kills any parasites, which may give trouble later otherwise.

5. The treatment after killing depends upon whether it is desired to set the butterfly as soon as possible or not. The two alternatives are to pin the butterfly in a cork-lined zinc collecting box or to transfer it to an envelope and put the envelope in a cigarette tin. A butterfly that has become stiff can be relaxed for setting at any time, but it then has a tendency in damp weather to 'spring', i.e. for the wings to return to the position in which rigor mortis set in and also setting is more difficult than with a fresh specimen. In the case of the larger butterflies they will remain fresh for 24 hours or so, but a small blue or skipper in a hot, dry climate will be stiff in half-an-hour. As a heavy day's catching may result in a catch of 100 butterflies the envelope system must be used at least in part and the collecting box, which must be kept damped, for the smaller ones to be set. It is desirable always to carry a pair of flat pointed tweezers for handling butterflies after being killed.

6. Setting requires practice and care should be taken to do the work thoroughly. The old English method was to use boards as in fig. 2, the butterfly low on the pin and the wings curved down, encouraging mites and grease. The modern system is to use boards as in fig. 3, the butterfly high on the pin and the wings horizontal. The standard depth of slot is  $\frac{1}{2}$  inch and suitable widths for boards by

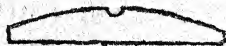


FIG. 2.



FIG. 3.

width of slot are  $12 \times \frac{1}{2}$ :  $6 \times \frac{1}{2}$ :  $5 \times \frac{1}{2}$ :  $3 \times \frac{1}{2}$  inch. The boards are of wood, lined cork or linoleum, which is better, papered over.



The best pins are of rustless steel: nickel or black japanned brass are suitable. The standard length is  $1\frac{1}{2}$  inches. The pin should slope slightly forward as in fig. 4. To set, insert the pinned butterfly into the slot of the board seeing that it is wide enough to just take the body easily. If the legs are long put a small bit of card on the pin so as to press the legs up against the body. See that the junction of the wings with the body is level with the top of the board. Separate out the wings flat on either side by means of a horizontal needle fitted as in fig. 5: A is a needle 6 inches long for large, 2 inches for small butterflies, B a glass headed steel pin and C a cube of linoleum or cork. Pull forward the wings by means of a fine pin or needle, very carefully so as not to pierce the wing or tear it: the needle should be pressed just below a vein and the pressure on the horizontal needle eased until the wings have reached the correct position. Arrange the antennæ with temporary



FIG. 4.



FIG. 5.

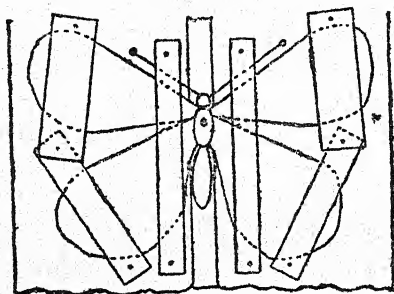


FIG. 6.

pins and then pin on strips of paper as shown in fig. 6, removing the horizontal needle and any temporary pins. Do not remove the butterfly from the board until the body has been quite stiff for 24 hours. Do not leave setting boards lying about as ants will ruin specimens very quickly: they should be placed in a ventilated box in an ant-proof place. Suitable boxes can be obtained from dealers or made up locally. To relax a stiff butterfly for setting use a tin box containing 2 or 3 layers of damp blotting paper: place thereon a clean piece of ordinary paper and the butterfly on top. Large butterflies will take 3 days to relax and small ones 24 hours: never set until thoroughly relaxed and do not leave in the relaxing tin too long or the butterflies will fall to pieces. A drop of creosot or a few drops of 1 in 1000 mercury chloride will keep off mould.

7. Store boxes of the best quality should be used, made by experts of three-ply wood, varnished, linoleum-lined and papered, also fitted with a naphthalene cell: the normal box is  $17\frac{1}{2} \times 12$  inches outside and 3 inches deep inside: if shorter pins are used the boxes can be shallower. If one is settled down cabinets with glass-topped shelves are suitable: the British Museum pattern have glass bottoms

as well. The box should be washed with mercury chloride solution and during damp weather creosot should be dropped on to a tiny sponge at the head of a pin so as to prevent mould. Naphthalène should be kept in the special cell and not exposed in the box as it is apt to vaporise and then deposit on the wings. In very damp climates it is as well to keep the store boxes in a zinc-lined drying box fitted with calcium driers.

8. Butterflies should be arranged in rows at right angles to the long side in the order given in the keys. On the pin below the body there should be a small paper label, giving above the locality, elevation and date of capture, and below the name of the actual collector. After each species or subspecies there should be a label on a separate pin giving the Latin name. Pinned butterflies should be handled with special pin tweezers. Damage to wings, etc. should be repaired with shellac dissolved in methylated spirits applied with a long needle; two consistencies are needed, thin for torn wings, viscous for bodies, etc. If a butterfly springs, reset it in dry weather and when set apply some viscous shellac at the base of the wings below: it is as well to do this with all butterflies set from relaxed specimens in climates apt to be damp, i.e. in the monsoon area. If mould appears, brush it off with a fine brush and dip the butterfly into pure petrol or benzine: if greasy dip in benzine.

9. The best form of envelope is shown in figs. 7 and 8 and the butterfly should be placed therein as shown in fig. 9. Three sizes

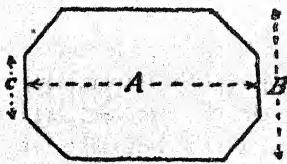


FIG. 7.

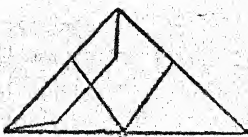


FIG. 8.

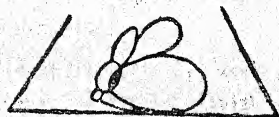


FIG. 9.

of envelope are convenient, where  $A \times B$  (fig. 7) is  $6\frac{1}{4} \times 4\frac{1}{4}$ :  $5 \times 3\frac{1}{4}$ :  $3\frac{1}{4} \times 2$  inches:  $c$  being  $\frac{2}{5}$  of  $B$ . The papers should be cut so that the flap is blank and thereon should be written the name of the butterfly, locality, elevation, date and name of the collector. Six to ten envelopes can be tied together in a bundle by means of a piece of cotton, the ends of which are lightly twisted together with a wet finger and thumb, see fig. 8. Papered butterflies should be stored in a biscuit tin containing naphthalene and can conveniently be placed vertically arranged in the order given in the keys. In damp climates they must be dried out in an insect-proof situation before putting in the tin or they will rot.

•10. Where a collector is liable to frequent moves, it is desirable to set the minimum number needed for study or reference and to keep the remainder in papers, setting them, and perhaps relaxing and putting them back in papers again, as needed. The objective should be 8 pairs of every species, subspecies, seasonal form, etc. with a number of duplicates of the rarer species for exchange etc.

11. Flower gardens attract numbers of butterflies, but to obtain the rarer species the collector must go to the jungle or moor. Inspect flowers, bushes particularly flowering ones most carefully and wave the net after doing so, watching where anything flies off to. Wet patches, trees oozing sap, carrion, manure are favourite places, also nallahs with running water and clearings particularly on tops of hills.

12. The various local lists that have been published from time to time often mention the best localities. A summary of them and of my own experiences may prove useful to collectors.

(a) Ceylon. *The Butterflies of Ceylon* by Ormiston (H. W. Cave & Co., Colombo, 1924), will prove most useful. I found Lady Horton's walk at Kandy most prolific.

(b) Travancore. A list appeared in vol. VI of the *Journal*.

(c) Palni Hills. I spent 6 weeks there in 1907 and published a list in vol. XX. The best localities were the moorland on the Plateau, Tiger sholah and the foot of the hills at Krishnamanaikan Tope.

(d) Coorg. A list of the butterflies by Yates was commenced in vol. XXXIV of the *Journal*.

(e) Nilgiris. An excellent list was published by Sir G. Hampson in the *Journal of the Asiatic Society*, 1888.

(f) North Kanara. An account of the butterflies with descriptions and coloured figures of the early stages was published in vol. X by Davidson, Bell and Aitken.

(g) The Konkan, Matheran and Cutch. Lists appeared in volumes XV, VIII and XII, respectively. Of Jodhpur in vol. XXXII.

(h) Central Provinces. An excellent list by Betham appeared in vols. V and VI. I spent from 1904-1911 at Jabalpur and found the vicinity of the temples on the Nerbudda road a good collecting ground. At Pachmarhi the best places were Jumbo Deep, Dhupgarh and Waters Meet.

(i) Northern Districts of Madras. I know of no list, but the area should prove very interesting.

(j) Poona, Mhow, Karachi. Lists by Swinhoe appeared in the *Proceedings of the Zoological Society* for 1885, 1886 and 1884, respectively. Lists for Karachi also appeared in vols. II and III of the *Journal*.

(k) Lucknow, Lahore. Lists by Rhé Philippe appeared in vols. XVI and XXV.

(l) Baluchistan. I have spent from 1927-1931 in the province and will shortly publish a list. The best localities are Urak Valley : Ziarat and the road thereto from Quetta and Loralai : Khojak pass : Khan Mehtarzai Pass : Gwal Forest : Chiltan Forest and Shingarh near Fort Sandeman. Lists from Razmak and Parachinar would prove of great interest.

(m) Chitral. I spent 1900-1901 in the country and a list appeared in vol. XIV. Excellent localities were the Ashreth, Tarben and Utzun nallahs : Sanitarium Hill near Drosh : Madaglasht : Sanoghar : the Shandur and Baroghil passes.

(n) Gilgit, Hunza, Baltistan. Gen. Tytler in vol. XXXI described many butterflies from this area. I published a list of butterflies obtained by the Visser expedition in the W. Karakoram in *Tijdschrift voor Entomologie* in 1927.

(o) Kashmir, Ladak, Kunawur, Shipki. No lists have appeared as far as I know.

(p) Murrec. I spent 1919-1921 in the area. Good localities were—the Lahur valley between Dunga Gali and Khanspur : Mokshipuri Hill above Dunga : the old Kashmir road below Nathia Gali : catchment area of Murree water-supply at Dunga : Kalpani road from Abbottabad. I know of no list from Peshawar or the Khyber. Of the Rawalpindi, Attock area there appeared a list in the *Proceedings of the Zoological Society* for 1886 and for Kangra in the same journal in 1882. For Kulu or Dalhousie, etc. I know of no list.

(q) Simla. I spent from 1912-1914 and 1921-1925 at this station. Butterflies are to be found round Elysium, Summer and Potters Hill, on Jakko and below the old cemetery. Better places are Mahasu, Kufri, the Damiana nallah near Mashobra, Narkanda and Bagi. A list by Rhé Philippe is now appearing in the *Journal*.

(r) Mussoorie. An excellent list with descriptions and figures of the early stages was published by Mackinnon in vol. XI. A list of good localities by Ollenbach appeared in vol. XXXIV. I spent a few weeks there in 1905 and found the nallah below the Brewery to be an excellent locality.

(s) Kumaon. A list by Hannyngton appeared in vol. XX. Lists for Nepal, Garhwal and Bhutan would be interesting.

(t) Sikkim. A good list was published by DeNiceville in the *Gazetteer of Sikkim* in 1894. I spent 2 months there in 1906 and found Tiger Hill and the Teesta Valley full of butterflies.

(u) Assam. Swinhoe published a list for the Khasi Hills in the *Transactions of the Entomological Society* in 1893. Wood

Mason and DeNiceville of Cachar in the *Journal of the Asiatic Society*, 1886. Tytler of Manipur and the Naga Hills in vols. XXI and XXIII of the *Journal*. South of the Mishmi Hills in vol. XXII. Myself of the Abor Hills in vol. XXIII and *Records of the Indian Museum*, 1912.

(v) Burma. Watson published an excellent list of Chin Hills butterflies in vol. X. Ellis of Tharrawady and the Pegu Yoma in vol. XV. Ollenbach of Tavoy in vol. XXVII. Lists have appeared of the Shan States in *Transactions Entomological Society*, 1890: Karen Hills in *Proceedings of the Zoological Society*, 1891: Tenasserim in *Journal of the Asiatic Society*, 1886 and of Mergui in the *Journal of the Linnean Society*, vol. XXI. I spent 5 months in the country in 1920-21 and found the following localities most interesting—Anisakan forest and Gokteik Viaduct near Maymyo: Loi-An valley near Kalaw: Thandaung and the road thereto from Toungoo, perhaps one of the best butterfly countries in the world: the Dawna range, Thingannyanyaung via Moulmein and Kawkereik: Kanbawk tin mine area: Pagaiye Hill near Tavoy: King Island; Mergui.

(w) Andaman and Nicobar Islands. Through the kindness and hospitality of Lt.-Col. M. L. Ferrar, the Chief Commissioner, I was able to visit these Islands in 1931. In the Andamans the best localities are—North Andaman, Webi reached from Stewart Sound (Bonington): Bomlungta in the Middle Andamans: Mount Harriet, Ariel Creek and Austinabad jungles in the South Andamans: Bumila and Ingoi in the Little Andaman. In Car Nicobar, Sawi Bay and Arung. Pulo Milo and the opposite coast in Little Nicobar. Kondul off Great Nicobar, a wonderful hunting ground. Pulo Babi, the Alexandra River and various other localities in Great Nicobar. Col. Ferrar intends to publish a list shortly. The previous list by Wood Mason and DeNiceville, *Journal of Asiatic Society*, 1881, is now out-of-date.



## GLOSSARY

*Note.*—For how to use the keys, index and plates see Section XI of the Introduction.

Abdomen	...	Body of butterfly, posterior to the thorax.
Anal angle	...	Same as tornus.
Anal valves	...	Exposed claspers at end of abdomen.
Anastomosed	...	Veins of the wing that are united for a portion of their length.
Androconia	...	Specialised microscopic scales on the wings of male butterflies, believed to be scent scales for attracting the female.
Annular	...	Ring-shaped.
Antennæ	...	Long feelers springing from between the eyes.
Apex, apical	...	Referring to the angle of the wing between the costa and the termen: see fig. 1, Section V.
Appressed	...	Referring to the palpi when pressed close to the face.
Base, basal	...	Referring to the portion of the wing nearest the body.
Brand	...	A raised area, circular, oval or elongate on the wing containing specialised scales.
C	...	Of common occurrence.
Catenulate	...	Markings consisting of rings joined together like a chain.
Caudate	...	Having a tail.
Cell	...	An elongate area extending from the base of the wing, enclosed by veins and whence radiate the veins to the costa and termen: see fig. 1.
Cilia, ciliated	...	Referring to the hair-like fringes edging the wings or tails.
Clasp	...	A part of the male genitalia: there is one on either side for clasping the female.
Clavate	...	Club-shaped.
Costa, costal	...	Referring to the upper margin of the wing extending from the base to the apex: see fig. 1.
Coxa	...	Part of the leg nearest the body.



- Crenulate ... Description of the outer edge of the wing, when it is convex at the end of each vein and concave between.
- 
- cv ... The costal vein bordering the upper edge of the cell: see fig. 1. Same as scv.
- dcv ... The discocellular vein, closing the end of the cell; see fig. 1.
- Dentate ... As crenulate, but the projections at the end of each vein are tooth-like.
- Disc, discal ... Referring to the area of the wing between the end of the cell and the outer margin.
- Dorsum, dorsal ... Referring to the hind margin of the wing extending from the base to the tornus: see fig. 1. (Or to the back, i.e. upper part of body.)
- DSF ... Dry season form.
- Erect ... Referring to the palpi when vertical, i.e. the axis at right angles to the axis of the body.
- Excavate ... Hollowed out.
- F or FW ... Forewing.
- Falcate ... Description of the apex of the wing, when it is produced beyond the outer margin.
- Fascia ... Band-like marking.
- Femur ... The second joint of the leg from the body, connecting the coxa to the tibia.
- Filiform ... Thread-like.
- Geminate ... Description of an ocellus containing two central spots or eyes.
- Genitalia ... The apparatus for copulation situated at the end of the body.
- H or HW ... Hindwing.
- Imago ... The final transformation or butterfly.
- Incrassate ... Gradually thickening.
- Internal veinlet ... Fold in the cell resembling veins.
- Interspace ... The spaces between the veins, numbered in accordance with the number of the vein immediately below: see fig. 1.
- Keeled ... Provided with a keel as in a boat, referring to the female pouch in *Parnassius*.
- Larva ... Caterpillar.
- Longitudinal ... Description of markings parallel to the veins.
- Lunule, lunulate ... Referring to markings shaped like crescents.

- Macular ... Description of markings consisting of conjoined spots.
- Marginal ... Description of markings immediately before the termen or outer margin.
- mv ... The median vein bordering the lower edge of the cell : see fig. 1.
- Nervures ... The veins or ribs supporting the membrane of the wings.
- NR ... Of not rare occurrence.
- Ocellus ... A marking resembling an eye, composed of a spot (pupil) surrounded by a ring (iris).
- Oriental ... Referring to the region between the Palearctic and Australian regions : see Section IX.
- Ovum ... Egg.
- Palearctic ... Referring to the region W and N of the Oriental region : see Section IX.
- Palpi ... Comparatively large processes originating from below the head and curving forward in front of the face.
- pvc ... The precostal vein, a small spur-like vein towards the base of vein 8 on the hindwing.
- Porrect ... Referring to the palpi when projected horizontally in front of the face, the axis being parallel to the axis of the body.
- Post-cellular, post-discal, post-median ... Referring to markings immediately after the cell or the discal markings.
- Pre-apical, etc. ... Referring to markings just before the apex, etc.
- Precostal cell ... A small area enclosed by veins towards the base of vein 8 on the hindwing : see fig. 1.
- Pupa ... Chrysalis.
- Pyriform ... Gradually club-shaped.
- R ... Of rare occurrence.
- Recumbent ... Referring to tufts of hair on the wings or body which are not erectile.
- Sagittate ... Referring to markings shaped like arrow heads.
- Scales ... The covering on the wings consisting of very small scales of various patterns.
- Scapulae ... Large shield-like scales on either side of the thorax.

• Scent organ	...	Referring to organs of various patterns on the wings or bodies believed to be connected with the production of scent : see Section V. 14.
scv	...	Subcostal vein, bordering the upper margin of the cell : see fig. 1.
Serrate	...	Furnished with small teeth, like a saw.
Setose	...	Scaly.
Sinuate	...	Waved.
Space	...	Same as interspace.
Spatulate	...	Spade-shaped.
Stigma	...	A narrow raised band of specialized scales on the forewing.
Strigæ, striated	...	Referring to markings consisting of fine lines.
Sub-apical, s u b-costal, etc.	...	Referring to markings near the apex, etc.
Tarsus	...	The part of the leg whereon the butterfly walks : the end of the tibia.
Tegumen	...	The upper or dorsal portion of the genitalia, lying above the two clasps.
Termen, terminal	..	Referring to the outer margin, i.e. the margin furthest from the base, between the apex and the tornus : see fig. 1.
Thorax	...	The part of the body between the head and the abdomen.
Tibia	...	The third joint of the leg between the femur and the tarsus.
Tornus, tornal	...	Referring to the lower or anal angle of the wing : see fig. 1.
Transverse	...	Referring to markings across the direction of the veins.
Truncate	...	Cut off.
Uncus	...	The end of the tegumen, which portion is movable downwards.
Unf	...	Underside of forewing.
Unh	...	Underside of hindwing.
Upf	...	Upperside of forewing.
Uph	...	Upperside of hindwing.
V1, V2, etc.	...	Vein No. 1, Vein No. 2, etc. : see fig. 1.
VC	...	Occurrence very common.
VR	...	Occurrence very rare.
WSF	...	Wet season form.
♂	...	Male.
♀	...	Female,

## KEYS TO FAMILIES OF INDIAN BUTTERFLIES

Aa (I). F one or more veins emanate from v7. Antennæ approximate at the base. Hind tibiae with only one pair of spurs.

Ab (H). H with precostal vein (except a few Pieridæ).

Ac (Ca). Forelegs fully developed in both sexes.

A (B). H via absent (present in all other families).

PAPILIONIDÆ. *The Swallowtails.*

B (A). H via present.

PIERIDÆ. *The Whites.*

Ca (Ac). Forelegs not perfect in both sexes.

Cb (G). Forelegs imperfect in both sexes (except in two genera).

Cc (Ea). F and H cells closed, dcvs present.

C (D). F vl runs into the mv at the base.

DANAIDÆ. *The Danaids.*

D (C). F vl runs into base free of the mv.

SATYRIDÆ. *The Browns.*

Ea (Cc). H cell open, dcvs absent (slenderly closed in a few cases).

E (F). Palpi small, narrow and sharp in front.

AMATHUSIIDÆ. *The Amathusiids.*

F (E). Palpi large, broad, rounded in front. F cell usually open.

NYMPHALIDÆ. *The Nymphalids.*

G (Cb). Forelegs imperfect and brush-like in ♂; developed for walking in the ♀.

ERYCINIDÆ. *The Erycinids.*

H (Ab). H no precostal vein. Forelegs perfect.

LYCAENIDÆ. *The Blues.*

I (Aa). F all veins from the cell or base. Antennæ wide apart at the base and often with a hooked club. All legs perfect.

HESPERIIDÆ. *The Skippers.*

## A. PAPILIONIDÆ

## A. Papilionidæ.—The Swallowtails. Genera Key.

1a (12a). F v9 present. H with precostal cell.  
 1b (10a). F v9 from about upper end of cell. F spur near base from mv towards v1.

1c (9). Palpi short, pressed against face.

1d (8). F v9 strongly bowed down at origin, not near or parallel to v10.

1e (3a). H v8 short, not nearly as long as v1 F. Larva on *Aristolochia* and is covered with many large hairy tubercles. Thorax below red.

1 (2). F v11 long, from opposite the origin of v2. Large, heavy body, mostly yellow. Head black with narrow red collar. H more or less shining yellow. ♂ with anal valves and scent organ H well developed.

*Troides*, Hub.—*The Birdwings*. (Plate 1). (= *Ornithoptera*, Bdr).

2 (1). F v11 from opposite the origin of v3. Head red.

*Tros*, Barbutt.—*The Red-bodied Swallowtails*. (Plate 1). (= *Byasa*, M: *Menelaides*, Hub: *Panosmia*, W.M. and DeN.: *Balignina*, Losaria, Pangerana, M).

3a (1c). H v8 as long as v1 F. Larva never on *Aristolochia*. Except for A 4/4 head and body never red.

3b (5a). F v11 free from v12. ♂ no scent organ; anal valves prominent.

3 (4). Larva with many spiny tubercles; pupa stick like. H v7 either very near v8 or v6, F v2 bowed. Tailless. Head white spotted; abdomen below black and white spotted.

*Chilasa*, M.—*The Mimes*. (Plates 1 and 2). (= *Cadugoides*, *Isamiopsis*, M: *Euplæopsis*, *Menamopsis*, DeN.).

4 (3). Larva practically smooth. H v7 about midway between v8 and v6: dcu 7-6 straight or nearly so. F v2 rarely bowed.

*Papilio*, L.—*The Black-bodied Swallowtails*. (Plates 2-5). (= *Achillides*, *Lærtias*, *Iliades*, *Orpheides*, Hub: *Araminta*, *Charus*, *Harimala*, *Sadengia*, *Sainia*, *Sarbaria*, *Tamera*, M.: *Pangeranopsis*, *Panosmiopsis*, W.M. and DeN: *Mimbyasa*, Evans).

5a (3b). F v11 anastomosed to v12. ♂ anal valves prominent and scent organ usually present. Antennæ scaled above. Pupa four-sided; larva smooth. Abdomen black striped below.

5b (7). H tailed or produced; v7 midway between v8 and v6.

5 (6). H tail long, slender, white edged. Above mostly white or pale greenish, with black stripes F.

*Pathysa*, M.—*The Swordtails*. (Plate 5). (= *Deoris*, Pazala, M.).

6 (5). H tail short, stout and black or absent. Apex F and tornus H much produced. Mostly black with green bands and spots.

*Zetides*, M.—*The Bluebottles and Jays*. (Plate 5). (= *Chlorisses*, Swain: *Dalchina*, M).



## A. Papilionidæ.—The Swallowtails. Genera Key—contd.

7 (5b). H. rounded, tailless; v7 much nearer v8 than v6.

*Paranticopsis*, WM. and DeN.—*The Zebras*. (Plate 6).

8 (1d). F v9 straight at origin, close to and parallel to v10; v11 free. F highly falcate. Claw of tarsi with a tooth in or behind the middle. With scent organs and anal valves.

*Meandrusa*, M.—*The Gorgons*. (Plate 6). (= *Dabasa*, M).

9 (1c). Palpi long, porrect. F v6 much nearer v7 than v5. No scent organ or anal valves.

*Teinopalpus*, Hope.—*The Kaiserihind*. (Plate 6).

10a (1b). F. v9 from well beyond end cell. No anal valves.

10 (11). F v9 out of v8, which meets v7 at end cell. H cell very small. Antennæ longer than cell. H produced to a long tail. F outer half clear wing.

*Leptocircus*, Swain.—*The Dragontails*. (Plate 6).

11 (10). F v9 and v8 out of v7; v6 and v7 approximate.

*Armandia*, Blanch.—*The Bhutan Glory*. (= *Bhutanitis*, Atk.).

12a (1a). F v9 absent; no spur from mv. H no precostal cell.

12 (13). H v8 shorter than v1 F. F v10 and 7 from a point. Antennæ club short, abrupt and flattened.

*Hypermnestra*, Men.—*The Desert Apollos*. (Plate 6).

13 (12). H v8 longer than v1 F. F v10 and 7 well separated at origin. Antennæ club gradually elongate and rounded. ♀ with horny pouch at end abdomen.

*Parnassius*, Lat.—*The Snow Apollos*. (Plate 6). (= *Kailāsius*, Korāsius, Tadumia, M).

## KEY TO SPECIES

A1. *Troides*.—The Birdwings. (Plate 1).

1a (3). Upf no prominent pale area about end cell.

1 (2). Uph no black suffusion internal to the marginal spots in 2, 3, 4.

a. Uph all space 1b and more than half cell black.

*helenā darsius*, Gray. (140-170). The Common Birdwing. Ceylon, NR.

♂ v. *cambyses*, Ehr. Uph with postdiscal black spots. R.

β. Uph all space 1b black: cell mostly yellow.

*helenā minos*, Cr. (140-190). South India. NR.

γ. Uph space 1b mostly yellow at base.

*helenā cerberus*, Fd. (140-170). Orissa, Sikkim—Burma, NR.

\* v. *eumagos*, Jord. Upf whitish vein stripes absent. (= *azelia*, *gypsothelia*, Jord).

δ. Smaller and darker.

*helenā heliconoides*, M. (130-160). Andamans. NR.

♂ v. *aphnea*, Jord. Upf with whitish vein stripes. NR. (= *rhyparia*, Jord).

η. Uph black dorsal area absorbs marginal spot in 2: ♀ postdiscal spots contiguous to one another and to the marginal spots.

*helenā ferrari*, Tyt. (140-170). South Nicobars, NR.



A1. Troides.—The Birdwings. (Plate 1)—*contd.*

2 (1). Uph with prominent black suffusion internal to the marginal spots in 2, 3, 4: ♂ space 7 all yellow up to marginal spot: ♀ base space 1b black.

*aeacus*, *Fd* (150-170). The Golden Birdwing. Garhwal—Burma. NR. (= *rhadamanthus*, *Auct.*).

3 (1a). ♂ upf prominent yellow (♀ white) area about end cell. *amphrysus ruficollis*, *But.* (130-160). The Malay Birdwing. South Mergui. VR.

## A2. Tros.—The Red-bodied Swallowtails. (Plate 1).

1a (5a). Tailless. ♂ anal valves and scent organ prominent. No red markings. Abdomen below red, black banded (except No. 4).

Nox Group.

1b (3a). Uph no pale area.

1 (2). ♂ uph dorsal fold rounded and lower half scent area white. Upf pale streaks visible in cell. ♀ above brown. Abdomen broad white stripe at side and head pinkish white.

*aidoneus*, *Db.* (100-120). The Lesser Batwing. Garhwal—Shan States. R.

2 (1). ♂ uph dorsal fold square and scent area only with a small white patch. ♀ shining black. Abdomen red stripe at side and head red.

α. ♂ unf no white stripes before margin. ♀ pale area near tornus upf and stripes dusted over and suffused.

*varuna astorion*, *Wd.* (90-130). The Common Batwing. Kumaon—Tavoy, NR.

β. ♂ unf white stripes before margin. ♀ unf pale tornal area pure white and sharp defined.

*varuna varuna*, *White*. Mergui—S. Burma. R.

3a (1b). Uph outwardly with a pale area.

3 (4). Uph ♂ submarginal white patches space 2-4; ♀ large white discal area from dorsum to space 5.

\* *zaleucus*, *Hew.* (80-110). The Burmese Batwing. Shan States—S. Burma. NR.

♂ v. *punctata*, *Evans*. White area black spotted. R.

4 (3). Uph outer half blue grey with black spots. Body yellow, black spotted. Head white. ♂ dorsal fold uph white, with red margin.

*sycorax*, *Gr. S.* (110-130). The Whitehead Batwing. Mergui. VR.

5a (1a). Tailed.

5b (8a). Tail long, spatulate, with very narrow neck. ♂ anal valves prominent, open above; scent organ ill developed.

Coon Group.

5c (7). Tail black.

5 (6). Uph no white spots; a rather pale red discal area from space 1-4. Head black; outer half abdomen all yellow.

*neptunus*, *Guer.* (100-120). The Yellow-bodied Clubtail. Tavoy—S. Burma. VR.

A2. Tros.—The Red-bodied Swallowtails. (Plate 1)—*contd.*

6 (5). Uph with white spots. Abdomen red and black; head red. F long and narrow. H outer half of cell white.

a. Uph white spots beyond cell extensive and complete.

*coon cacharensis*, But. (100-120). The Common Clubtail. Assam. NR.

β. Uph white spots more restricted.

\* *coon doubledayi*, Wall. Burma. C.

γ. Uph red spots near margin in space 3 united.

*coon sambilanga*, Doh. Nicobars. VR.

7 (5c). Tail red. Uph no discal spots in 3, 4 or 7.

*rhodifer*, But. (120-140). The Andaman Clubtail. Andamans. NR.

8a (5b). Tail gradual, neck not narrow. Head and abdomen below mostly red.

8b (11a). ♂ no anal valves and scent organ ill developed. Unh complete row 7 red spots.

Hector Group.

8 (9a). Uph outer half at least of cell white and complete row of large discal spots beyond.

a. Upf outer white area prominent; no black stripes in 2 and 3; pale stripes do not enter cell.

*jophon jophon*, Gray. (110-130). The Ceylon Rose. Ceylon. R.

β. Upf all black stripes complete and pale stripes enter cell.

*jophon pandiyana*, M. (100-130). The Malabar Rose. S. India. R.

9a (8). Uph at most a small white spot end cell.

9 (10) Uph discal and submarginal row red spots. Upf prominent white central and apical band.

*hector*, L. (90-110). The Crimson Rose. Ceylon—Bengal. C. Andamans. VR.

10 (9). Uph white discal spots in 2-5, some of which may be absent.

a. Uph usually white spot end cell; discal spots prominent and pressed up against cell. Unh discal spot in 1 white.

*aristolochia ceylonicus*, M. (80-110). The Common Rose. Ceylon. VC.

β. Uph rarely spot in cell; unh spot in 1 mostly red. Typical form with spots remote from cell and incomplete.

*aristolochia aristolochia*, F. India. VC.

v. *diphilus*, Esp. Discal spots complete and against cell. NR.

γ. Discal spots often red edged. Unh discal spot in 1 often red. Only *diphilus* form seems to occur.

*aristolochia goniopeltis*, Roth. Burma. Andamans. NR.

δ. Uph postcellular spots in 2-5 half the size of those in the Andaman form.

*aristolochia sawi*, nov. Car Nicobar. NR.

η. Uph with only postcellular spots in 1b & 2, those in 3. 4 sometimes show obscurely.

*aristolochia camorta*, M. Central Nicobars. NR.

ζ. Uph postcellular spot in 2-4 or 5 are present but are very small except for the one in 4.

**A2. Tros.—The Red-bodied Swallowtails. (Plate 1)—contd.**

\**aristolochiæ kondulana*, nov. South Nicobars. NR.

11a (8b). ♂ with anal valves and scent organ well developed. Uph no white in cell.

*Latreillei* Group.

11b (17a). Uph with discal white spot or spots.

11c (14a). Uph white discal spots 2-4 or 5 and submarginal spots 2-5.

11 (12a). Tail black. Uph submarginal spots in 4 and 5 white and that in 5 often joined to discal spot. Unh submarginal spot in 6.

*adamsoni*, Gr.S. (90-110). Adamson's rose. Shan States—Dawnas. R. (= *mineroideus*, El. and DeN.)

12a (11). Tail red tipped.

12 (13). H cilia black from tornus to v3.

a. ♂ uph no discal spot in 5. ♀ spot in 5 small, only halfway to v6.

*latreillei latreillei*, Don. (110-130). The Rose Windmill. Garhwal—Sikkim. R. (= *minereus*, Gray).

β. Uph white spot in 5 reaches v6, but does not fill base of space 5.

\**latreillei kabrua*, Tyt. Assam—N. Burma. R.

13 (12). H cilia red from tornus—v3, uph discal white spot in 5 large and fills base of space 5.

*polla*, DeN. (110-130). DeNicéville's Windmill. Assam—N. Burma. VR.

14a (11c). Uph very large discal but no submarginal spot in 5; those in 2, 3 and 4 prominent.

14 (15a). H tail black. Uph large white spot in 6 and small one in 7.

*nevilli*, WM. (100-120). Nevill's Windmill. Assam—S. Shan States. VR. (= *chentsong*, Ob).

15a (14). H tail red tipped.

15 (16). Uph submarginal spot in 4 red; no spot in 6. Unh small discal white spot in 4, often visible above.

a. Below body blacker.

\**philoxenus philoxenus*, Gray. (110-130). The Common Windmill. Kashmir—Nepal. NR.

β. Below body almost entirely red. Larger.

*philoxenus polyeuctes*, Db. (120-140). Sikkim—Burma. C. (= *hostilius*, *letincius*, Fruh).

16 (15). Uph submarginal spot in 4 mostly white.

a. Uph nearly always white spot in 6. ♀ uph discal white spot in 1b above brown; outer half H black.

*dasarada ravana*, M. (100-130). The Great Windmill. Kashmir—Kumaon. NR.

β. Uph very rarely discal white spot in 6. ♀ uph no discal white spot in 1b-2; above entirely black but females of the *ravana* type occur as rare varieties.

*dasarada dasarada*, M. (120-140). Sikkim—Assam. NR.

γ. Wings narrower. Unh paler from cell to costa and spot in 6 absent.

*dasarada barata*, Roth. (120-140). Burma. R.

A2. Tros.—The Red-bodied Swallowtails. (Plate 1)—*contd.*

17a (11b). Uph no white discal spots.

17 (18). Above unmarked. Unh tail red tipped; red discal spots from 1b-2 and submarginal spots to 5, which may show very obscurely above.

*crassipes*, Ob. (110-120). The Black Windmill. Manipur—S. Shan States. VR.

18 (17). Tail black. Unh submarginal red spots to 6.

a. Uph complete row nearly white submarginal spots 2-6.

*alcinous pambertoni*, M. (100-120). Pemberton's Chinese Windmill. Sikkim—Bhutan. VR.

β. Uph prominent black submarginal spots and small red submarginal spot in 2. ♀ pale brown, obscure traces of submarginal red spots 3-6.

*alcinous tytleri*, Evans. Tytler's Chinese Windmill. Manipur, Chin Hills. R. (= *impediens*, Tyt.).

## A3. Chilasa.—The Mimes. (Plates 1-2).

1a (4a). H v7 twice as far from v8 as from v6. End cell very rounded.

Agestor Group.

1b (3). Above pale blueish or grey with black veins.

1 (2). Upf black bar across cell in continuation of v5. Uph markings between margin and cell incomplete.

a. Small. Uph margin dark chestnut, discal and postdiscal spots complete.

*agestor govindra*, M. (83-100). The Tawny Mime. Kashmir—Kumaon, NR.

β. Large. Uph margin bright chestnut, postdiscal spots incomplete. Paler and bluer above.

\* *agestor agestor*, Gray (100-120). Sikkim—Dawnas. NR (= *cresconius*, *senchalus*, Fruh.).

2 (1). Upf no black bar across cell. Uph prominent yellow tornal spot.

a. Unh costal margin dark up to scv as termen.

*epycides epycides*, Hew. (70-90). The Lesser Mime. Sikkim—N. Burma. R. (= *curiatus*, Fruh.).

β. Unh costal margin pale, terminal dark area ends at apex.

\* *epycides hypochra* Jord. Shan States—Karen Hills. R.

3 (1b). Upf dark brown, blue spot end cell and blue discal stripes. Uph brown, prominent tornal spot.

a. Upf discal blue stripes nearly to termen. Uph and unh usually no submarginal white markings.

\* *slateri slateri*, Hew. (80-100). The Blue-striped Mime. Sikkim—N. Burma. R. (= *jaintinus*, Fruh.).

β. Upf stripes narrower and shorter. H usually with submarginal white markings.

*slateri marginata*, Ob. Shan States—Karen Hills. R.

γ. Upf blue stripes only half way to termen. H always with submarginal white spots.

*slateri tavoyana*, But. S. Burma. R. (= *chephas*, Jord.).

A3. *Chilasa*.—The Mimes. (Plates 1-2)—*contd.*

4a (1a). H v7 very much nearer 8 than 6; dcu 7-6 bowed.

Clytia Group.

4 (5). Unh no row yellow terminal spots. Uph submarginal whitish spots in a regular row. Dark-brown; uph blue shot. Typical form with blueish spots upf and white submarginal spots uph. Dimorphic form with upf end cell white and white discal spots; uph basal half white, black veined.

*paradoxa telearchus*, Hew. (120-150). The Great Blue Mime. Assam—Burma. R.

\* *v. danisepa*, But. R.

5 (4). Unh prominent row yellow marginal spots. Upf submarginal white spots irregular, spot in 4 shifted in. Typical form dark-brown with white spots; dimorphic form with pale stripes.

α. Typical form rather pale with very small postdiscal spots. Dimorphic form yellowish-brown, markings wide.

*clytia lankeswara*, M. (90-120). The Common Mime. Ceylon. NR. (= *clytioides*, M.)

*v. dissimila*, Evans. NR.

β. Typical form dark-brown with prominent postdiscal spots of which the apical one may be prolonged inwards and there may be traces of a discal series. The dimorphic form has broad cream white markings typically, but in N.-E. India there is much black dusting causing the pale markings to be restricted. There is a third intermediate form with the forewing as in the first form and the hindwing with pale stripes nearly as extensive as in the second form.

\* *clytia clytia*, L. India. NR. (= *panope*, Esp.: *casyapa*, M. lanata, Fruh.).

\* *v. dissimilis*, L. S. India—N. W. Himalayas. Pale form. NR.

*v. dissimillima*. Evans. N.E. India—Burma. Dark form NR.

*v. commixtus*, Roth. N. E. India. VR.

γ. First form normally with the apical spots upf enlarged into long white streaks. There are two well marked varieties—first var upf white spots absent or replaced by black spots, which may be white centred, and uph with pale streaks sometimes as extensive as in *commixtus*. Second var above dark indigo-blue with obscure dusky postdiscal spots upf and uph pale streaks prominent. Dimorph *dissimillima*.

*clytia onpape*, M. Burma. NR.

*v. janus*, Fruh. R.

*v. papone*, Wd. R.

δ. Second form only. Larger; upf postdiscal spots much enlarged and uph prominent yellow marginal spots.

*clytia flavolimbatus*, Ob. (120-130). Andamans. NR.

A4. *Papilio*.—The Black-bodied Swallowtails. (Plates 2-5).

1a (6a). Below prominent red basal markings. Unh cell never sprinkled pale scales.

Memnon Group.



A4. *Papilio*.—The Black-bodied Swallowtails. (Plates 2-5)—*contd.*

1b (4a). H width greater than half length.

1 (2.3). ♂ ♀ upf pale-blue submarginal band; uph outer  $\frac{3}{4}$  blue with two rows black spots. Tailless.

a. ♂ upf blue band short, not above v4. ♀ blue areas strongly tinged yellow.

*polymnestor parinda*, M. (120-150). The Blue Mormon. Ceylon. NR.

β. ♂ upf blue band to v5 and to v7 in ♀.

\* *polymnestor polymnestor*, Cr. S. India. NR.

2 (1.3). ♂ above blue scaled on a black ground on either side of each vein beyond cell; unh usually red lunules at tornus, which may be replaced by grey or may be extended to costa; tailless. ♀ in 3 forms. 1st (typical) tailless; uph a large white discal area. 2nd tailless, more or less as ♂ above; unh a white streak along dorsum. 3rd tailed, body yellow; uph usually a white spot end cell and a more or less complete row of discal white spots.

\* *memnon agenor*, L. (120-150). The Great Mormon. Sikkim—Burma, South Nicobars. C. stragglers on Andamans and Car Nicobar. (= *depelchini*, Robbe.; *phaenix*, Dist.; *polymnestorides*, M.; *primigenius*, Roth.; *androgeos*, Cr.; *aphrodite*, *phœniciana*, Rōb).

♀ *v. butlerianus*, Roth. NR. (= *rhetenorina*, Jord.).

\* ♀ *v. alcanor*, Cr. NR.

3 (1.2). ♂ tailless; black, uph a broad discal blue band. ♀ tailed, rather as *alcanor*, but tail red and white tipped.

*mayo*, Atk. (120-150). The Andaman Mormon. Andamans, NR. (= *decurio*, Niepelt.).

4a (1b). H long and narrow, width not more than half length.

4 (5). ♂ ♀ alike; tail pink or white tipped. Uph elongated discal white spots in 3-4 or 2-5 and more or less complete row red lunules. Upf covered small whitish scales. Head above and abdomen below red.

a. Uph tail red tipped. Unh red tornal area in 1 continued to base.

*bootes janaka*, M. (110-120). The Tailed Redbreast. Garhwal—Abor. R. (= *sikkimensis*, W. M.; *kala*, Tyt.).

β. Uph tail white tipped and usually only 2 discal spots. Unh red tornal area not continued to base.

\* *bootes bootes*, Wd. Assam. R. (= *echo*, Ehrman.).

γ. As last but uph 4 discal white spots.

*bootes mixta*, Tyt. Manipur and Nagas. N. Burma. R.

5 (4). ♂ tailless; black; uph blue scaled and tornal ocellus white edged. ♀ with very broad tail; uph red streak base cell; uph a large discal white patch and a prominent series double red submarginal lunules, extending to tail.

\* *rhetenor*, Wd. (110-130). The Redbreast. Kumaon—Burma. NR. (= *pubilius*, *turificator*, Fruh.).

♂ *v. leococelis*, Jord. Upf white tornal patch. NR.

6a (1a). Below no basal red markings.

6b (8a 27a). Unh cell all black, not sprinkled yellow or white scales. Sexes alike. Uph blue-scaled; tornal red ocellus. Tailless.

Protenor Group.



A4. *Papilio*.—The Black-bodied Swallowtails. (Plates 2-5)—*contd.*

6\* (7). Unh red submarginal lunules only at apex and tornus, with some discal blue scaling between. Upf no blue scaling: streaks of white scaling on either side of veins. ♂ uph prominent white streak from base under v8. The DSF is considerably smaller than the WSF.

α. ♂ uph blue scaling in 6 and 7. Unf darker. ♀ browner. *protenor protenor*, Cr. (100-130). The Spangle. Kashmir—Kumaon. NR.

β. ... ♂ uph blue scaling 2-7.

\* *protenor euprotenor*, Fruh. (110-140). Sikkim—N. Burma. NR.

7 (6). Unh red submarginal lunules complete. Upf blue scaling. ♂ upf with woolly stripes on vsl, 2 and 3.

α. Head yellow and body buff at the sides. Upf no red lunules in 2 and 3.

*elephenor elephenor*, Db. (110-130). The Yellow-crested Spangle. Assam. VR.

β. Head and body black.

*elephenor schanus*, Jord. The Black-crested Spangle. S. Shan States. VR. (= *doddsi*, Auct.).

8a (6b. 27a). Unh basal area including cell sprinkled white or yellow scales.

8b (16a). Above prominent green or blue bands or patches and sprinkled green scales on the black areas. Tailed.

Paris Group.

8c (13a). Above no broad green band; may have a narrow pale or green band upf and a broad green subapical patch uph.

8 (9a). Upf green patch not prominent. Above green scaling dense. Upf submarginal green lunules. ♂ upf woolly streaks on vs 1, 2 and 3. Upf pale discal streaks short.

*bianor gladiator*, Fruh. (110-130). The Chinese Peacock. Burma. VR.

9a (8). Upf green or blue patch prominent.

9 (10.11a). Upf inner edge of green patch more or less straight, but ragged and rather diffused. ♂ upf woolly streaks as in last. DSF much smaller than WSF.

α. Upf green band prominent to apex. Unf pale discal streaks obscure and do not enter cell.

*polyctor polyctor*, Bdv. (90-120). The Common Peacock. Chitral—Kumaon. C. (= *peeroza*, M.).

β. Upf green band present or absent, but rarely to apex. Unf pale streaks long, enter cell and reach termen.

*polyctor ganesa*, M. (120-130). Sikkim—N. Burma. C. (= *triumphator*, Fruh.).

A4. *Papilio*.—The Black-bodied Swallowtails. (Plates 2-5)—*contd.*

β. Unf pale streaks to termen.

*paris paris*, L. (90-120). The Paris Peacock. Orissa. Kumaon—Burma. C. (= *splendorifer*, *Fruh.*).

11a (9.10). Uph blue patch much longer in 6 than in 5; red submarginal lunules prominent. ♂ no woolly streaks.

11 (12). Upf green postdiscal band. Uph blue patch enters cell and reaches termen in 6.

a. Unf pale discal streaks do not enter cell.

*arcturus arius*, *Roth.* (110-120). The Blue Peacock. Kashmir—Kumaon. NR.

β. Unf pale streaks enter cell. Uph blue patch in 6 broken.

\* *arcturus arcturus*, *Wd.* (120-130). Nepal—Dawnas. NR. (= *privatus*, *Röb.*).

12 (11). Upf narrow pale yellow discal band.

*krishna*, *M.* (120-30). The Krishna Peacock. Sikkim—Burma. NR.

13a (8c). Upf and uph broad green discal band.

13 (14a). Upf green band does not enter cell. Tail green tipped.

♂ with woolly streaks along vs 1, 2 and 3.

\* *crino*, *F.* (80-100). The Common Banded Peacock. Ceylon. S. India—Bengal. NR. (= *fruhstorferi*, *Rob.*).

♂ v. *montanus*, *Fd.* ♂ without the woolly streaks. R.

14a (13). Upf green band enters cell. Uph yellow spot at apex. Tail black. ♂ no woolly stripes.

14 (15). Uph green band broad and broadly enters cell. Uph green discal area large, circular, enters cell.

*buddha*, *Wd.* (90-100). The Malabar Banded Peacock. S. India. R.

15 (14). Upf green band narrow, just enters end cell. Uph no green in cell; 2 apical spots and tornal ocellus prominent.

*palinurus*, *F.* (90-100). The Burmese Banded Peacock. S. Burma. R.

16a (8b). Above no green or blue bands, patches or scales.

16b (19a). Tailless. Unf and often upf a prominent white spot end cell. Above black, covered yellow scales.

Castor Group.

16 (17a). ♂ ♀ upf complete series equal sized submarginal white spots in regular row. Upf postdiscal white spots short and submarginal series prominent.

*dravidarum*, *WM.* (80-100). The Malabar Raven. S. India. R.

17a (16). ♂ upf no white submarginal spots.

17 (18). ♂ uph complete series equal sized submarginal white spots 1-6, spot in 7 smaller; submarginal row prominent. ♀ upf row of very small submarginal spots, decreasing to specks in 5-7, 8 larger; uph as ♂, spots dusky and decreasing to apex.

\* *mahadeva*, *M.* (80-120). The Burmese Raven. Shan States—S. Burma. R. (= *maheswara*, *Fruh.*).

18 (17). ♂ uph large discal white spots 4, 5, 6 to end cell and spot in 7 half length of spot in 6. ♀ upf with submarginal spots.

a. ♂ uph and unh discal spots only 4-7, 4 small, no submarginal spots. ♀ upf submarginal spots small; obscure discal grey streaks

**A4. Papilio.—The Black-bodied Swallowtails. (Plates 2-5)—contd.**

1-4; uph all spaces and outer half cell dusky grey up to the dark submarginal band, bearing white crescents.

\* *castor polias*, Jord. (100-130). The Common Raven. Sikkim. NR.

β. ♂ same; unh often discal spot in 3 and may be a complete row; uph traces of submarginal spots at apex. ♀ discal grey streaks absent; uph streaks white.

*castor castor*, Wd. Assam—N. Burma. NR. (= *mesites*, Jord.).

γ. ♂ uph submarginal spots complete and sometimes the discal ones also. ♀ upf submarginal spots increasingly prominent towards apex; uph only postdiscal series dusky grey spots as in No. 17.

*castor mehalia*, Gr.S. S. Burma. R.

19a (16b). Tailed.

Helenus Group.

19b (26). Upf no prominent pale discal band from dorsum to apex.

19c (24a). Up large white subapical patch.

19d (22a). Unh pale scales in cell arranged in 3 prominent streaks.

19e (21). Unh submarginal lunules red. ♂ upf outer half covered dense hairs, concealing yellow scaling.

19 (20). Up white area 5-7. Unh complete row submarginal red lunules.

α. Unh blue lunules beyond the white discal spots, often continued to dorsum.

*helenus mooreanus*, Roth. (115-130). The Red Helen. Ceylon. NR.

β. Unh no blue lunules. Unf pale discal streaks short, do not reach termen or enter cell.

*helenus daksha*, M. S. India. NR.

γ. Smaller. Unf pale streaks reach termen and enter cell.

*helenus helenus*, L. (110-120). Mussoorie—Burma. C. (= *rufatus*, Roth.).

20 (19). Up discal white area 4-7. Unh only submarginal red lunules in 1b and 2; discal blue lunules 2-4. Unf pale streaks short.

*iswara*, White. (130-150). The Great Helen. Mergui. VR.

21 (19e). Unh submarginal lunules yellow, complete; no blue lunules: small discal yellow spots 1-3. Up white area 4-7 and often spot base 3. Unf white spot in 1b.

\* *chaon chaon*, Wd. (115-130). The Yellow Helen. Orissa. Nepal—N. Burma. C. (= *leucacantha*, *paryphanta*, Jord.).

β. ♂ uph white area larger, fourth patch produced into a long point, projecting beyond the third patch.

*chaon ducenarius*, Fruh. S. Burma. NR.

22a (19d). Up pale scales in cell uniformly spread.

22 (23). Up discal white area 5-7, rarely extending unf to 1a and 1b. Unh complete row red lunules; white patch has inner edge quite straight and enters cell. Unf pale streaks short.

*noblei*, DeN. (110). Noble's Helen. Burma. VR. (= *haynei*, Tyt.).

23 (22). Up discal white patch 4-7. Unh complete series blue lunules beyond the white patch.

A4. *Papilio*.—The Black-bodied Swallowtails. (Plates 2-5)—*contd.*

*fuscus andamanicus*, Roth. (105-115). The Andaman Helen. Andamans. R. (= *prexaspes*, Auct.).

24a (19c). Uph either a discal white band across the wing or a central row of white or red spots.

24 (25). ♂ ♀ alike with a discal white band uph, which is conspicuously wider in the middle. Upf no white submarginal spots. Unh submarginal lunules yellow.

*hipponous pitmani*, El. and DeN. (90-100). Pitman's Helen. S. Burma. R. (= *leptosephus*, Fruh.).

25 (24). ♂ uph discal white band of even width; uph and unh submarginal lunules red; upf prominent marginal white spots. ♀ in 3 forms. Typical form, uph red discal spots; upf white central and apical band; resembles *hector*. 2nd form as ♂. 3rd form uph white discal spots 2-5, which may enter cell; upf pale brown outwardly with prominent black streaks between veins and no white marginal spots; resembles *aristolochiæ*. Very subject to aberrations.

\* *polytes romulus*, Cr. (90-100). The Common Mormon. Ceylon, India. Burma. VC. (= *pammon*, Auct.: *sakontala*, Hew.: *walkeri*, Janson: *astreans*, Jord.: *cyroides*, *rubida*, Fruh.).

♀ v. *cyrus*, F. R.

\* ♀ v. *stichius*, Hub. VC.

β. Larger. Uph ♂ marginal red lunules absent. ♀ typical form as ♂. 2nd form as *stichius*, but larger.

*polytes stichiodes* Evans. Andamans. C.

γ. Uph white markings much narrower. In *cyrus* form of ♀ red submarginal lunules more developed.

*polytes nikobarus*, Fd. All Nicobars. C.

26 (19b). Above black with a pale band across both wings; uph submarginal crescents. Unh evenly powdered white scales. ♂ upf outer half densely hairy.

a. Upf postdiscal band yellowish, macular throughout. Uph end cell on centre of the discal band.

*demolion liomedon*, M. (90-100). The Malabar Banded Swallowtail. S. India. R.

β. Upf pale band greenish, lower 4 spots conjoined. Uph end cell beyond the discal band.

\* *demolion demolion*, Cr. The Burmese Banded Swallowtail. S. Burma. NR.

27a (6b. 8a). Unh basal area entirely yellow.

Demoleus Group.

27 (28a). Tailless. Upf postdiscal yellow spots irregular. Uph base dark brown, prominent large black ringed blue spot below costa.

a. Upf discal spot 1a no larger than spot in 3. Uph black area end cell not half way to origin v7.

\* *demoleus demoleus*, L. (80-100). The Lime Butterfly. Ceylon, India, N. Burma. VC. (= *erithonius*, Cr.: *demoleinus*, Ob.).

β. Upf spot in 1a much wider than spot in 3. Uph black area end cell not halfway to origin of v7.

*demoleus malayanus*, Wall. S. Burma. C.

A4. *Papilio*.—The Black-bodied Swallowtails. (Plates 2-5)—*contd.*

28a (27). Tailed.

28 (29a.) Above veins not black; entirely yellow with narrow black bands, the discal band being blue centred.

*alexanor*, *Esp.* (75-90). The Baluchi Yellow Swallowtail. Baluchistan. VR.

29a (28). Above veins black. Upf regular row submarginal spots.

29 (30). Upf basal  $\frac{1}{4}$  black, sprinkled yellow scales.

a. Yellow areas paler and more extensive: blue powdering uph more diffuse.

*machaon centralis*, *Stg.* (75-90). The Common Yellow Swallowtail. Baluchistan. N.-W. Frontier. NR.

$\beta$ . Upf blue lunule above tornal red spot conjoined to it; dark discal band very near end cell.

*machaon asiatica*, *Men.* (75-90). Chitral—Nepal. C.

v. *ladakensis*, *M.* Tail very short. High elevations only. R.

$\gamma$ . Upf blue lunule separated from tornal red spot by a black line; discal band broader and further from cell.

*machaon sikkimensis*, *M.* Sikkim—Bhutan. NR.

$\delta$ . Upf tornal red spot very large and not black edged below; discal band still further from end cell; dcu 6-7 broad black as well as 5-6. Above darker yellow.

\* *machaon verityi*, *Fruh.* Assam—N. Burma. R. (= *birmanicus*, *Roth.*).

30 (29). Upf yellow streak from base along lower edge cell and basal  $\frac{1}{4}$  cell yellow streaked, not sprinkled yellow scales. Upf yellow streak in 1 to base.

*xuthus*, *L.* (75-90). The Chinese Yellow Swallowtail. N. Burma. VR.

A5. *Pathysa*.—The Swordtails. (Plate 5).

1a (3a). Upf dark bar end cell double, enclosing 2 pale spots; 4 dark bars in cell.

1 (2). Unh central row of pale spots complete.

a. Upf 4th bar in cell from base not below mv and post discal line not to vl.

*eurous cashmirensis*, *Roth.* (60-70). The Sixbar Swordtail. Kashmir—Kumaon. NR.

$\beta$ . Upf 4th bar extends along v3 and postdiscal line to vl.

*eurous sikkimica*, *Heron.* Sikkim—Assam. NR.

2 (1). Unh central row spots consist of only a spot mid 7, end cell and in 2.

\* *glycerion*, *Gray.* (65-75). The Spectacle Swordtail. Sikkim—N. Burma. NR. (= *paphus*, *DeN.*).

3a (1a). Upf dark bar end cell single.

3 (4a). Upf only 3 dark bars in cell; beyond a narrow dark discal and submarginal line, the area between being triangular.

a. Upf 2nd bar from base to vl or beyond; discal bar to v3.

*agetes agetes*, *Wd.* (75-90). The Fourbar Swordtail. Sikkim—N. Burma. NR.

A5. *Pathysa*.—The Swordtails. (Plate 5)—*contd.*

$\beta$ . Upf 2nd bar from base not to v1; discal line meets marginal line between v2 and 3. Uph no white submarginal line in 5 and 6.

\* *agetes iponus*, *Fruh.* Tavoy—S. Burma. NR.

4a (3). Upf 4 broad dark bars in cell.

4b (6). Unh central row red spots.

4 (5). Uph row pale rounded spots on the broad dark margin, of which the second from the apex is out of line.

a. Uph dark margin does not enclose pale spot in 3; unh precostal spur not defined black.

\* *nomius nomius*, *Esp.* (75-90). The Spot Swordtail. Ceylon, S. India—Sikkim. NR.

$\beta$ . Uph dark margin encloses pale spot in 3; unh precostal spur defined black. All dark markings broader.

*nomius swinhoei*, *M.* Assam—S. Burma. NR. (= *pernomius*, *Fr.*).

5 (4). Upf a pale green regular chain line, not spots, on the dark margin.

a. Uph no continuous central dark band.

*aristeus anticrates*, *Db.* (70-80). The Chain Swordtail. Sikkim—Assam. R.

$\beta$ . Uph continuous central dark band. Markings broader.

*aristeus hermocrates*, *Fd.* Burma. R. (= *aristeoides*, *nigricans*, *Eimer.*).

6 (4b). Unh no central row red spots.

a. Upf marginal band to v1 and submarginal to v2; but do not unite; subbasal band to dorsum and 2nd from base to v1. Uph no tornal grey area.

*antiphates ceylonicus*, *Eim.* (80-95). The Fivebar Swordtail. Ceylon. VR. (= *antiphanus*, *Fr.*)

$\beta$ . Upf submarginal and marginal band unite at v3 and reach dorsum. Uph WSF grey tornal area extending as a broad band to the costa, absent in DSF.

*antiphates naira*, *M.* S. India. R.

$\gamma$ . Very variable. Upf 2nd bar from base to v1; postdiscal band, if extended below v2 unites with the marginal band. Uph grey tornal area prominent but confined to tornus.

\* *antiphates pompilius*, *F.* Sikkim—Burma. C. (*alcibiades*, *Auct.*; *itamputi* and *nebulosus*, *But.*; *continentalis*, *Eimer.*).

$\delta$ . All markings much broader. Upf 2nd bar from base to dorsum; discal bar curved under bar end cell as in  $\beta$ . Uph grey tornal area extended to costa as a broad band, but is black at apex.

*antiphates epaminondas*, *Ob.* Andamans. NR. (= *laestrygonum*, *WM.*).

A6. *Zetides*.—The Bluebottles and Jays. (Plate 5).

1a (3a). Uph no submarginal row green spots.

1 (2). H long tail. Upf transparent green; black margin along costa and termen united by 4 black lines towards apex.

\* *cloanthus*, *Wd.* (85-95). The Glassy Bluebottle. Kashmir—Burma. NR. (= *cloanthulus*, *Fr.*).



A6. Zetides.—The Bluebottles and Jays. (Plate 5)—*contd.*

2 (1). H tail very short. Black with green band across wings, which becomes macular towards the apex F.

a. Upf apical part of discal band yellowish green. Uph mv black on the discal band.

*sarpedon teredon*, Fd. (80-90). The Common Bluebottle. Ceylon. S. India. C. (= *thermodusa*, Swin.).

β. Above band broader and nearly uniformly coloured. Uph mv mostly white on the discal band. H tail shorter.

\* *sarpedon sarpedon*, L. Kashmir—Burma. C. (= *melas*, Fr.).

3a (1a). Upf row green submarginal spots.

3b (8). Upf cell spots single. Tailless.

3c (6a). Unh costal dark bar towards base not continued to origin v7 and veins on disc not black. Above markings pale bluish green.

3 (4a). Unh costal bar separated from basal dark band, bar red centred. Unh extreme end cell brown.

a. Uph costal bar coalesced to basal dark band; upf lower of 2 submarginal spots in 1b rarely present. H tooth at v4 prominent. Upf subbasal green line often absent. Uph mv thick black on the discal band.

*doson doson*, Fd. (70-80). The Common Jay. Ceylon. C. (= *jason*, Auct.).

β. Uph mv less black on inner part of discal band. H tooth v4 not prominent. Upf subbasal green line prominent.

*doson eleius*, Fr. S. India—Bengal. C.

γ. Uph costal bar separate from basal dark band. Above discal band wider. Upf 2nd submarginal spot in 1 nearly always present.

\* *doson axion*, Fd. Kumaon—Burma. C. (= *acheron*, M.).

4a (3). Unh costal bar united to basal band; extreme end cell red.

4 (5). Upf only one submarginal spot in 1b. ♂ scent wool forms a narrow stripe. Abdomen above black.

a. Unh costal bar red centred. Upf spot near base 5.

*evemon albociliatis*, Fruh. The Lesser Jay. Assam—Tavoy, R.

β. Unh costal dark bar all black. Upf no spot near base 5.

*evemon orthia*, Jord. Mergui—S. Burma. R.

5 (4). Upf always 2 submarginal spots in 1b. Unh costal bar red centred: Abdomen above whitish. Very rarely the costal bar unh is not joined to the basal bar and then the basal margin of the silver band between is notched at scv.

a. Uph ends some veins black on the green band. Unh no pale spot base 3. Unf 2 submarginal spots in 7 conjoined.

*eurypylus cheronus*, Fruh. (75-90). The Great Jay. Sikkim—Burma. NR. (= *petina*, Jord.).

β. Bands above very broad and no dark veins on the band uph. Unh pale spot base 3. Unf 2 submarginal spots in 7 separate.

*eurypylus macronius*, Jord. Andamans, R.

6a (3c). Unh costal dark bar continued to origin v7 and all veins on disc black.

6 (7). Uph cell all pale. Above pale green with broad markings. Unh costal bar all black, but spot internal to it pale yellow; discal spots orange, not red.

A6. *Zetides*.—The Bluebottles and Jays. (Plate 5)—*contd.*

*bathycles chiron*, Wall. (75-100). The Veined Jay. Sikkim—Burma. NR. (= *ligyra*, Jord.)

7 (6). Upf cell dark with 2 green spots. Above spotted as No. 8, but smaller, markings bright green. Unh costal bar red centred and discal spots red.

*arycles*, Bdv. (70-80). The Spotted Jay. Assam—S. Burma. R.

8 (3b). Upf cell spots double. Above black, markings small and bright green. H short tail.

a. Tail always longer.

*agammemnon menides*, Fruh. (85-100). The Tailed Jay. Ceylon, S. India. C.

β. Tail always shorter.

\* *agammemnon agammemnon*, L. Kumaon—Burma. C. (= *rufescens*, Ob. : *rufoplenus*, Fr.)

γ. Above markings much greyer green.

*agammemnon andamanica*, Lathy. Andamans. NR.

δ. Unh 5 to 7 light red spots.

*agammemnon decoratus*, Roth. Car and Central Nicobars. NR.

η. As *decoratus*, but in the ♂ the tails are absent or very short.

*agammemnon pulo*, nov. South Nicobars. NR.

A7. *Paranticopsis*.—The Zebras. (Plate 6).

1a (3). Upf discal streaks in 3, 4 and 5 entire.

1 (2). Unh tornal yellow spot very small; usually dark bar in cell formed by continuation of v4. Unf discal spot just below v8 rarely present as a dot.

a. ♂ broad white stripes. ♀ as ♂, white stripes broader than the black ones.

*macareus indicus*, Roth. (80-100). The Lesser Zebra. Sikkim. NR. (= *polynices*, DeN.).

β. ♀ very dark white stripes much narrower than the dark ones.

*macareus lioneli*, Fruh. Assam. NR.

γ. ♂ white stripes narrower. ♀ as ♂ but white spots on apical half F and outer half H narrower.

*macareus gyndes*, Jord. N. Burma—Tavoy. R.

δ. ♂ white markings very broad, upper discal streak conjoined to spots beyond cell; upf cell bars broad and complete, but unf each broken into 3 spots. ♀ as β but apex F much darker and spots thereon quite white, while rest are sullied; upf discal streaks in 2 and 3 short, do not nearly reach base; cell bars much reduced.

*macareus perakensis*, Fruh. Mergui—S. Burma. R.

2 (1). Unh tornal yellow spot very large; very rarely dark bar in cell formed by continuation of v4. Upf discal spot below v8 always prominent.

a. ♀ as ♂.

*xenocles phrontis*, DeN. (85-120). The Great Zebra. Sikkim. NR. (*xenocrates*, Fr.)

**A.7 Paranticopsis.—The Zebras. (Plate 6)—*contd.***

β. ♀ much darker and pale stripes much narrower.

\* *xenocles xenocles*, Db. Assam, NR. (= *thermus*, Fr.).

γ. As α but pale stripes narrower.

*xenocles kephisos*, Fruh. Burma. R. (= *neronus*, Fr.).

3 (1a). Uph discal streaks in 3, 4 and 5 divided into small spots.

All pale markings very small.

a. Upf cell spots very small and unf nearly absent.

\* *megarus megarus*, Wd. (65-90). The Spotted Zebra. Assam—N. Burma. R.

β. Upf and unf cell spots well developed.

*megarus similis*, Lathy. Shan States—S. Burma. R.

**A.8. Meandrusa.—The Hooked Swallowtails. (Plate 6).**

1 (2). Below basal  $\frac{1}{4}$  dark chocolate-brown. ♂ above dark-brown with yellow submarginal spots. ♀ broad discal white band, interrupted beyond end cell F. Apex F produced.

\* *gyas gyas*, Wd. (105-115). The Brown Gorgon. Sikkim—Assam. R. (= *lachinus*, Fr.).

β. ♂ below central area lighter. Upf spots smaller.

*gyas aribbas*, Fruh. Upper Burma—Dawnas. VR.

2 (1). Below basal area orange yellow, brown-spotted. Above orange-yellow spotted dark-brown margins upf and discal band upf. Apex F falcate.

a. Upf no discal yellow spot in 5.

\* *payeni evan*, Db. (110-130). The Yellow Gorgon. Sikkim—Assam. NR. (= *evanides*, Fr.).

β. Upf discal yellow spot in 5 and upf well defined dark-brown line v3-v7 along inner edge of dark marginal area, separating off small yellow spots.

*payeni amphis*, Jord. N. Burma. R.

**A.9. Teinopalpus.—The Kaiserihind. (Plate 6).**

Above green, ♂ with prominent yellow upper discal area uph; ♀ with this area grey and 2 grey bands upf. Below ♂ basal half green, outer half yellow-brown; ♀ mostly grey.

a. ♂ uph yellow discal area enters end cell and ends just before v3. Smaller.

\* *imperialis imperialis*, Hope. (90-120). The Kaiserihind. Sikkim—Assam. R. (= *parryia*, Hope: *himalaicus*, Roth).

β. ♂ uph yellow discal area scarcely enters end cell and ends on v2. ♀ uph darker, yellow dorsal area to v3.

*imperialis imperatrix*, DeN. N. Burma—Ataran. R.

**A.10. Leptocircus.—The Dragonails. (Plate 6).**

1 (2). Above band white, constricted on upf towards centre. Tarsal claw with a tooth. ♂ with scent organ.

A10. *Leptocircus*.—The Dragontails. (Plate 6)—*contd.*

*curius*, F. (40-50). The White Dragontail. Assam—Burma. NR.

2 (1). Above band green and black band beyond of nearly even width throughout. Tarsal claw simple. ♂ no scent organ.

*a.* Unh white band along dorsum towards tornus ill defined and widely separated from latter.

*meges indistincta*, Tyt. (40-55). The Green Dragontail. Assam—N. Burma. NR.

*β.* Unh white band along dorsum towards tornus well defined and closer to latter.

\* *meges virescens*, But. Karens—S. Burma. C.

A11. *Armandia*.—The Bhutan Glory. (Plate 6).

Above black with narrow white lines; uph tornus with 2 or 3 blue and white ocelli on a black area, crowned by a large red area, which is posteriorly yellow. Long tail at v4, short tails at vs 2, 3 and 5.

\**lidderdalei*, Atk. (90-110). The Bhutan Glory. Bhutan, Naga and Chin Hills. R.

A12. *Hypermnestra*.—The Desert Apollo. (Plate 6).

Above cream white. Upf black spot in and at end cell; just beyond cell double, black ringed, red spot. Unh white with irregular greenish patches and obscure red spots base costa and on disc.

\**helios balucha*, M. (45-55). The Desert Apollo. Baluchistan. VR.

A13. *Parnassius*.—The Snow Apollos. (Plate 6).

The spotting and venation very variable and no single character can be taken as absolutely reliable, except the shape of the ♀ abdominal pouch.

1a (4a). F v7 ex 6; 10 and 11 free. Antennæ white ringed. Unh red basal spots complete; uph never blue spots. Upf usually 2 red spots end cell, red spot mid 1b and no connecting dark area or band. Uph red spot base 7; 3 discal red spots, viz., mid 7, between vs 4-6, in 1b-2, latter being more often black above; submarginal row black lunules. ♀ pouch brown, boat-shaped below, pointed in front.

Apollo Group.

1b (3). ♀ pouch posteriorly keeled. Upf cilia not or hardly chequered; vitreous dark marginal area wide, as wide or wider than the submarginal white and post discal black bands together.

1 (2). Very large with large red spots.

*thianscharica insignis*, Stg. (70-80). The Large Keeled Apollo. Chitral, Hunza. R. (= *discobolus*, Stg.: *baroghila* and *hunzaica*, Tyt.).

A13. *Parnassius*.—The Snow Apollos. (Plate 6)—*contd.*

2 (1). Smaller.

a. Small and very white, very little black scaling.

*jacquemontii chitralensis*, M. (55-70). The Keeled Apollo. Chitral NR.

β. Large; often much black scaling; sometimes yellowish.

*jacquemontii jacquemontii*, Bdv. (65-75). Kashmir—Kumaon.

R. (= *himalayensis*, El. : *rhodius*, Hon.).

3 (1b). ♀ pouch not keeled. Upf cilia prominently chequered; vitreous dark marginal area narrow.

a. Comparatively large and white.

\* *epaphus nirius*, M. (50-60). The Common Red Apollo. Chitral—Kumaon. NR. (= *cachemiriensis*, Ob. : *impunctata*, Aust : *hilliensis* and *bashahrecus*, BH).

β. Small and dark.

*epaphus sikkimensis*, El. (40-50). Sikkim. C.

4a (1a). F v7 not ex 6. Antennæ black, not white ringed, but sometimes scaled yellow or whitish.

4b (7a). F vs 10 and 11 not anastomosed, but may touch.

Hardwickei Group.

4 (5a). F vs 6 and 7 from a point and origin v10 far removed. Uph complete submarginal row blue and white centred black spots on a white ground, though margin may be blackish. Unh prominent red basal spots. Upf spots end cell and mid 1 usually red but not joined by a dark band. Uph not as a rule a red spot base 7; remaining discal spots prominent. Unh submarginal spots greenish. Two broods, DSF pale, WSF dark. ♀ pouch white like a cylinder squashed in at the sides and the projecting lower portion then dented.

a. Comparatively large.

\* *hardwickei hardwickei*, Gray. (55-65). The Common Blue Apollo. Chitral—Kumaon. C. (= *charino* Gray : *afēr*, *albicans*, *otos*, Fr. : *parva*, Ver. : *natuposterior*, BH, WSF).

β. Smaller.

*hardwickei viridicans*, Fruh. (50-60). Sikkim. C.

5a (4). F vs 6 and 7 separate at the base; usually bases 6, 7 and 10 equidistant. Upf spots end cell and mid 1b black and joined by a dark band. Uph blue centred black submarginal spots in at least 2 and 3; beyond to costa there may be a complete series of similar spots or a dark wavy line.

5 (6). Comparatively small. Unh basal red spots obsolete. Uph no red spot base 7 and discal spots not white centred. ♀ pouch surrounds end abdomen, like a cylinder squashed flat from below and the end split, resulting in 2 divergent points.

a. H angled at v7. Upf discal band obsolete; postdiscal dark band in ♂ not to dorsum. Uph discal spots 5 and 7 prominent red, equal sized; spots 1b and 2 obsolete; only blue submarginal spots in 2 and 3; marginal dark area faint.

*delphiuss kafir*, Avin. (55-65). The Kafir Banded Apollo. Safed Koh—Kafiristan. VR.

β. Upf postdiscal and discal bands conjoined in 3. Uph discal red spot in 5 prominent; 7 smaller black or red; only blue spots in 2 and 3.

A13. *Parnassius*.—The Snow Apollos. (Plate 6)—*contd.*

*delphiuss chitralica*, Ver. The Chitral Banded Apollo. Chitral. R.

γ. Very washed out pale form with reduced markings. Upf no discal band or spot in 1b. Uph no discal spot in 7; spot in 1b small and black; margin dark; only blue spots in 2 and 3 and the wavy line beyond obsolete.

*delphiuss hunza*, Groum. The Hunza Banded Apollo. Hunza. VR.

δ. Upf discal and postdiscal bands narrow, complete, sharp defined. Uph discal spot 5 prominent, spot mid 7 black, just indicated or absent; submarginal blue spots usually complete and on dark area, which does not reach the margin, but sometimes there are only blue spots in 2 and 3 with a dark wavy line beyond; discal spots 1b and 2 often red and usually indicated.

*delphiuss nicevillei*, Avin. The Astor Banded Apollo. Astor, Western Kashmir. R. (= *cardalina*, Avin: *rileyi*, Tyt).

η. Upf much as last, may be washed out looking in ♀. Uph discal red spot 5 very large, from v4-6, spot mid 7 small, black: always discal red spots 1b and 2; submarginal blue spots complete and on a dark ground that reaches the margin.

*delphiuss atkinsoni*, M. The Pir Panjal Banded Apollo. E. and S. Kashmir. VR. (= *sogilaica*, Tyt).

ξ. Upf postdiscal dark band very broad, as broad as marginal dark band; white submarginal spots small and end at v2; discal band often incomplete posteriorly. Uph discal spot in 5 variable; spot in 7 usually absent; sub-marginal blue spots complete and on a broad dark area to margin; discal spots in 1 and 2 prominent or absent.

*delphiuss stoliczkanus*, Fd. The Ladak Banded Apollo. Ladak—Kulu. VR. (= *stenosemus*, Hon.: *rupshuana*, *ladakensis*, *mamai-vei*, *workmanni*, Avin: *spitiensis*, BH: *obliterata*, Ver).

ε. Similar to last, but whiter, less dusky scaling and smaller markings.

*delphiuss florenciae*, Tyt. Garhwal and Kumaon to Thibet. (= *kumaonensis*, Ril.).

θ. Upf very white with narrow complete bands. Uph basal black scaling up to inner edge of discal spots 5 and 7, which are red and equal; no spots 1 and 2; submarginal blue (sometimes black) spots in 2 and 3 only and wavy line beyond prominent; margin white.

*delphiuss lampidius*, Fruh. The Sikkim Banded Apollo. Sikkim. VR. (= *whitei*, Bing: *pundit*, Avin: *macdonaldi*, Roth: *centripancta*, BH: *sulphureus*, Antrum).

ι. As last but much larger and very dark. Upf almost completely black scaled and uph black scaled to outer edge of discal spots, which are small and equal; margin narrow black.

*delphiuss latoniuss*, Bryk. (55-65). The Thibet Banded Apollo. Sikkim—Phari Jong. VR.

6 (5). Large. Unh basal red spots prominent. Uph red spot base 7. Above general tone yellowish. Upf black bands broad, complete, considerable black scaling. Uph discal spots 5 and 7 large, white centred; from spot in 5 a black band to dorsum;



A13. *Parnassius*.—The Snow Apollos. (Plate 6)—*contd.*

submarginal blue spots 2 and 3 large and wavy line to costa broad; margin broadly pale. ♀ pouch as last, but sides broken and separated from body.

*imperator augustus*, Fruh. (80-90). The Imperial Apollo. Sikkim. VR.

7a (4b). F vs 10 and 11 anastomosed.

7b (10). F vs 10 and 7 well separated at base, 7 and 6 approximate. Comparatively small. Uph all submarginal spots black. Uph discal band more or less complete, no red spots.

Acco Group:

7 (8a). Upf cilia black. Uph always small red discal spots 5 and 7, no spot base 7; unh red basal spots. ♀ pouch black with 2 long contiguous points.

a. Upf marginal dark area broad; postdiscal band prominent; discal band slender. Uph discal spots small; sub-marginal spots small and separate; margin narrowly dark.

*simo simo*, Gray. (45-55). The Black-edged Apollo. Ladak Gilgit, Shipki, Nepal to Thibet. VR. (= *simonides*, Aust.: *lorimeri*, Tyt: *confusus*, *peteri* and *simoides*, BH).

β. Upf marginal dark area reduced to a thin line, thickened at end veins; white submarginal spots and postdiscal dark band very broad. Uph black spot in 7 behind the red spot; from discal spot in 5 a more or less complete black band to dorsum; sub-marginal black band broad and continuous, margin white with black veins. VR.

*simo acconus*, Fruh. Sikkim. (= *moelleri*, Bing.).

8a (7). Upf cilia pale yellow or white. ♀ pouch white, hangs down as a pendulous bag, squashed flat at the sides.

8 (9). Above very white no red spots at all. Very small. Upf discal band more or less complete; postdiscal dark band, submarginal white spots and marginal dark band all of equal width. Uph discal spots 5, mid 7 and base 7 small and black: more or less continuous discal band from 7 to dorsum; basal black scaling very reduced; submarginal spots small, well separated, margin white.

*hanningtoni*, Avin. (40-45). Hannington's Apollo. Sikkim—S. Thibet. VR. (= *hunningtoni*, Avin in errore).

9 (8). Uph with red spots.

a. As β but very washed out.

*acco acco*, Gray. (40-60). The Varnished Apollo. Ladak. Karakoram Spiti, Nepal—Thibet. VR. (= *hampsoni*, Avin: *punctata*, Tyt: *tagalangi*, *pundjabensis*, BH).

β. Upf white submarginal spots unusually sharp, veins broadly black especially 2, 3 and 4. Uph prominent red spot 5, mid 7, base 7 and a black spot in between the two latter; spot in 5 joined to dorsum by a black band and usually a black spot between 5 and 7; submarginal spots prominent, well separated, margin narrowly black. Unh has a varnished yellow appearance, concealing the basal red spots except that in 7.

*acco gemmifer*, Fruh. (45-65). Sikkim. VR.

10 (7b). Very large. F v10 ex 7; 6 and 7 well separated at origin. Upf discal band usually broadened below cell, bases 2 and 3 usually entirely black; no red spot. Uph no spot base 7, small red

A13. *Parnassius*.—The Snow Apollos. (Plate 6)—contd. •

or black spot mid 7; very large red spot extending from v4<sup>2</sup>6, usually white centred and a red or black basal bar in 1-2; complete row blue centred black submarginal spots on a dark ground; margin narrowly dark. ♀ pouch very large, cornute. Unh red basal spots obscure.

Charltonius Group.

\* *charltonius*, Gray. (80-90). The Regal Apollo. Chitral—Kumaon. R. (= *atrogutta*, *haudei*, *accidentalis*, Bryk.: *bryki* Haud: *deckerti*, Ver.: *ducalis*, B and LeCerf: many named aberrations BH).

## B. PIERIDÆ

## B. Pieridæ.—The Whites. Genera Key.

1a (3a). F v5 ex 6; v9 absent. H precostal straight, directed back. Palpi slender, hairy.

1 (2). F v8 absent; upper apex of cell acute, dcvs concave, H v8 as long as cell. Antennæ club slender.

*Leptosia*, Hub. The Psyche. (Plate 7). (= *Nychitona*, But.).

2 (1). F v8 present, very short; upper apex of cell obtuse, dcvs nearly straight. H v8 half as long as cell. Antennæ club spatulate.

*Baltia*, M. The Dwarf Whites. (Plate 7).

3a (1a). F vs 5 and 6 separate at origins.

3b (17a). F v6 ex 7 from well beyond end cell.

3c (14a). H with well-developed precostal vein.

3d (11a). Palpi slender, hairy, third joint usually long.

3e (9a). F dcv 5-6 not angled.

3 (4a). F upper apex cell acute; vs 5 and 6 approximate at origin, dcv 5-6 short and may or may not be in line with dcv 4-5; v10 from upper end cell; v8 comparatively long; v9 present or absent. H precostal straight. Antennæ with stout club.

*Euchloe*, Hub. The Little Whites. (Plate 7). (= *Anthocaris*, Bdv.).

4a (3). F upper apex cell obtuse; v9 absent. H precostal curved forward.

4 (5a). F v8 very short, hardly visible and may be absent; v10 usually from well before end cell and dcv 5-6 unusually long, but first group are transitional to last genus. Antennæ club stout.

*Pieris*, Schrank. The Bath and Cabbage Whites. (Plate 7). (= *Danaus*, L.: *Ganoris*, Dalman.: *Pontia*, Fab.: *Synchlœ*, *Mancipium*, Hub.: *Leucochlœ*, Rüb.: *Parapieris*, DeN.).

5a (4). F v8 comparatively long and prominent.

5b (8). F v11, if present, free from 12.

5c (7). F costa smooth.

5 (6). F v11 present. Antennæ club stout.

*Aporia*, Hub. The Blackveins. (Plate 7). (= *Metaporia*, But.: *Mesapia*, Gray).

6 (5). F v11 absent. Antennæ club slender.

*Delias*, Hub. The Jezabels. (Plate 7). (= *Thyca*, Wallace.: *Piccarda*, Grote.).

7 (5c). F costa serrate in ♂: v11 present. Antennæ club slender.

*Prioneris*, Wall. The Sawtooths. (Plate 8).

8 (5b). F v11 anastomosed to v12. Antennæ club slender.

*Belenois*, Hub. The Pioneer. (Plate 7). (= *Anaphæis*, Hub).

9a (3e). F dcv 5-6 angled; v10 well before end cell; 11 and 8 present, 9 absent. H precostal well curved forward. Antennæ club slender.

9 (10). ♂ no abdominal hair pencils. F apex not produced, termen straight or convex.

*Huphina*, M. The Gulls (Plate 8).

## B. Pieridæ.—The Whites. Genera Key—contd.

10 (9). ♂ (except *lalassis*) with abdominal hair pencils. Apex F usually produced and may be falcate, termen usually concave.

*Appias*, Hub. The Puffins and Albatrosses. (Plate 8). (= *Hyposcritia*, Geyer: *Catophaga*, Hub.: *Tachyris*, Wallace: *Saletara*, Dist.: Lade, DeN.).

11a (3d). Palpi scaled, short and stout, third joint very short. F v10 from just before end cell.

11 (12a). H precostal short and lumpy. F apex lies between vs 7 and 8. ♂ uph white band base 7; unf tuft white hairs towards base dorsum.

*Catopsilia*, Hub. The Emigrants. (Plate 9). (= *Callidryas*, Auct.).

12a (11). H precostal slender, curved back.

12 (13). F apex at end v7. H rounded; v7 well before end cell; dcu 7-6 inclined.

*Gandaca*, M. The Tree Yellow. (Plate 9).

13 (12). F apex between vs 6 and 7, falcate or pointed.

*Dercas*, Db. The Sulphurs. (Plate 9).

14a (3c). H no precostal vein.

14b (16). F v10 before end cell.

14 (15). H scv and 7 in a straight line. F falcate and H dentate at v3. Palpi hairy, third joint short. F apex between vs 6 and 7.

*Gonepteryx*, Leach. The Brimstones (Plate 9). (= *Rhodocera*, Dupon).

15 (14). H scv and v6 in a straight line, 7 from at or just before end cell, dcu 6-5 vertical. Palpi scaled, third joint short.

*Terias*, Swain. The Grass Yellows. (Plate 9). (= *Kibbreeta*, Nirmula, M).

16 (14b). F v10 from beyond end cell; apex between vs 7 and 8. Palpi long, hairy, third joint short.

*Colias*, Fab. The Clouded Yellows. (Plate 9). (= *Eurymus*, Swain).

17a (3b). F vs 6 and 7 separate or only just forked (except *Ixias pyrene*), Palpi hairy, short, third joint short. H precostal curved forward.

17b (19a). H v8 shorter than v1 F.

17 (18). H v6 not nearer 5 than 7.

*Ixias*, Hub. The Indian Orange Tips. (Plate 9).

18 (17). H v6 much nearer 5 than 7.

*Colotis*, Hub. The Little Orange Tips and Arabs. (Plate 9). (= *Callosune*, Db.: *Teracolus*, Swain.; *Idmais*, Bdv.: *Maduis*, Swain).

19a (17b). H v8 equal to v1 F.

19 (20). F vs 6 and 7 well separated at origin; dcu 6-5 straight, 5-4 angled; v9 absent.

*Hebomoia*, Hub. The Great Orange Tip. (Plate 9).

20 (10). F vs 6 and 7 from a point; dcu 6-5 angled, 5-4 straight; v9 present.

*Pareronia*, DeN. The Wanderers. (Plate 9). (= *Eronia*, Auct.: *Nepheronia*, Bdv.).

## KEY TO SPECIES

B1. *Leptosia*.—The Psyche. (Plate 7).

a. Unmarked white, except upf black apex and large black spot from 3-4. Unh striated greenish.

\* *nina nina* F. (35-50). The Psyche. Ceylon. S. India—Mussoorie—Burma. Andamans. C. (= *xiphia*, F).

β. Upf discal spot constantly smaller.

*nina nicobarica*, Doh. South Nicobars. NR.

B2. *Baltia*.—The Dwarfs. (Plate 8).

White. Upf prominent black spot end cell; discal costal bar, continued in ♀ as a discal band; marginal black spots more prominent at apex.

1 (2). Unh single dark spot end cell; more or less dusted blackish scales, especially at base in ♂.

\* *shawi*, Bates. (30-40). Shaw's Dwarf. Chitral—Ladak. NR.

2 (1). Unh 2 dark spots end cell; yellow, veins yellow, broadly defined dark brown and similar at apex unf.

*butleri butleri*, M. (35-45). Butler's Dwarf. Ladak—Kumaon. R.

β. ♂ upf complete discal band. Below brighter.

*butleri sikkima*, Fruh. Sikkim. VR.

B3. *Euchloe*.—The Little Whites. (Plate 8).

White or pale yellow. Upf prominent black spot end cell; apex dark brown more or less white spotted.

1 (2a). F costa plain. Below apex F and all H uniform dull green or greenish brown; unh costa with white spots and spot end cell. F v9 present.

a. ♂ very pale yellow: ♀ white.

*charlonia doveri*, nov. (35-45). The Lemon White. W and N Baluchistan (Nushki and Toba). R.

β. ♂ ♀ very pale yellow. Unf dorsum white.

*charlonia pila*, nov. Zhob. R.

γ. ♂ ♀ yellow: unf dorsum yellow.

\* *charlonia lucilla*, But. (35-45). Khyber. Baluchistan, Punjab. R. (= *lucillides*, Ver.).

2a (1). F costa black spotted. Above white, apex F spotted. Unf white bar mid costa continued across mid cell.

2 (3). Below apex F and all H with broad green regular stripes, leaving narrow white stripes between. F v9 present.

\* *belemia*, Esp. (40-50). The Striped White. Ormarah, Mekran, Baluchistan. VR.

3 (2). Below apex F and all H with irregular open network of greenish brown lines, enclosing prominent pearly spots.

a. F v9 present.

*ausonia pulgerata*, Christoph. (40-45). The Pearl White. W Baluchistan (near Quetta). R.

B3. *Euchloe*.—The Little Whites. (Plate 8)—*contd.*

.β F v9 absent.

\* *ausonia daphalis*, M. Zhob—Chitral—Kumaon. R. (= *belia*, Cr.: *venosa*. But.).

B4. *Pieris*.—The Whites. (Plate 8).

F costa never spotted.

1a (6a). Upf prominent black spot end cell; at apex ends veins black. Unh spot end cell not joined to costal spot.

Daplidice Group.

1b (5). Upf and unf a more or less prominent discal costal black bar separate from the marginal spots; in ♀ a black spot mid 1b. Unf apex and all unh with more or less prominent green or yellow spots or bands.

1c (3a). Unh pale spot mid cell elongated.

1 (2). Unh veins crossing discal pale bands not green edged. F v10 from end cell; vs 5 and 6 approximate.

*chloridice*, Hub. (45-50). The Lesser Bath White. Baluchistan—Chitral—Ladak. R. (= *alpina*, Ver.).

2 (1). Unh veins throughout broadly green edged. F v10 just before end cell; 5 and 6 approximate.

\* *callidice kulora*, M. (50-60). The Lofty Bath White. Safed Koh—Chitral—Kumaon. C.

3a (1c). Unh pale spot mid cell circular. F v10 from well before end cell; 5 and 6 separate.

3 (4). Unh veins not prominently yellow.

\* *daplidice moorei*, Rob. (45-50). The Bath White. Baluchistan—Chitral and Murree. NR.

4 (3). Unh veins prominently yellow. Unh DSF nearly unmarked.

*glauconome*, Klug. (45-55). The Desert Bath White. Baluchistan—Punjab and Chitral. R. (= *vipasa*, M).

5 (1b). Upf and unf no discal costal bar; discal dark band in ♀ not above vein 4. ♂ upf prominent black spot mid 3 and traces of discal band below. Unh pale-yellow, base costa orange and all veins very broadly black edged.

\* *dubernardi chumbiensis*, DeN. (45-60). The Chumbi White. Chumbi Valley. Sikkim. NR.

6a (1a). Upf no prominent black spot end cell; unf always prominent black spot mid 1b and 3, of which both appear on upf in ♀ and usually only that in 3 in ♂.

Brassicæ Group.

6 (7. 8a). Unh more or less prominent broad irregular green or yellowish green discal band and similar basal area. Upf spot in 3 large and often joined to marginal dark area; a triangular costal bar above the spot, usually joined to apical dark area above, but prominent below.

*krueperi devta*, DeN. (50-55). The Green Banded White. Baluchistan—Ladak, VR.

7 (6, 8a). Unh all veins prominently darkened, greenish.

a. Small and pale; ♀ white.



B4. *Pieris*.—The Whites. (Plate 8)—*contd.*

\**napi ajaka*, M. (40-55). The Greenvein White. Murree—Kumaon. C. (= *ajuta*, M.).

β. Larger. ♀ yellow and often much darkened. Very variable.

*napi montana*, Ver. (50-60). Sikkim—S. Shan States. NR. (= *australis*, Ver.).

γ. ♂ dark veining very pronounced: ♀ nearly black.

*napi melaina*, Ver. Chumbi Valley, Sikkim. NR.

8a (6, 7). Unh unmarked beyond a more or less intense dusting of dark scales, which may be irregularly distributed.

8 (9a). Unh not dusted dark scales. Upf dcv black.

*naganum*, M. (65). The Naga White. Assam—N. Burma. VR.

9a (8). Unh dusted black scales. Upf dcv unmarked.

9b (11a). Uph with black spots at end veins. Upf inner edge of dark marginal area deeply scalloped.

9 (10). Unf with black marginal markings large. Above black margin continuous, cilia prominently broadly white. Unh uniform.

*deota*, DeN. (65). The Kashmir White. Kashmir—Ladak. R.

10 (9). Unf no marginal black markings. Smaller. Upf black margin not continuous. Unh uniform.

a. Larger. More heavily marked.

*canidia canis*, Evans. (50-60). The Indian Cabbage White. Travancore—Nilgiris. C.

β. Smaller. Less heavily marked, but very variable.

\**canidia indica*, Evans. (45-60). Zhob. Chitral—Dawnas. VC.

11a (9b). Uph no black marginal spots. Upf inner edge black apical area regular or very nearly so.

11 (12). Upf black apical area to v3 or 4. Large.

\**brassica*, L. (65-75). The Large Cabbage White. Baluchistan. Chitral—Assam and Plains adjoining Himalayas. VC. (= *nipalensis*, Gray).

12 (11). Upf black apical area only to v5 or 4. Smaller.

*rapæ*, L. (45-55). The Small Cabbage White. Baluchistan—Chitral and Ladak. VC.

B5. *Aporia*.—The Blackveins. (Plate 8).

1 (2a). H v8 very short, ends over origin v6. Above white becoming transparent outwardly on F, veins black: on H ill-defined submarginal spots. Unh yellow with very prominent black veins.

Peloria Group.

*peloria*, Hew. (42-44). The Thibet Blackvein. Kumaon—Thibet border over 14,000 ft. NR.

2a (1). H v8 ends well beyond origin v6.

2b (4a). Uph margin pale, veins crossing it white or narrowly black. Unh yellow with more or less complete sagittate discal line, which may be absent.

Leucodice Group.

2 (3). Uph usually unmarked, no discal sagittate band. Above no suffusion of dark scales. F upper dcv 5-6 not angled.

B5. *Aporia*.—The Blackveins. (Plate 8)—*contd.*

*a.* Small. Upf postdiscal band complete and veins beyond towards apex prominently black, widening at termen. Unh darker, sagittate discal band prominent. Upf bar end cell variable, wider in ♀.

*leucodice balucha*, Mar. (40-50). The Baluchi Blackvein. Baluchistan—Chitral and Ladak. NR. (= *leechii*, M.: *sorex*, GrS.).

*β.* Large. H produced in middle. Upf postdiscal band usually obsolete in 3. Unh paler and discal band often absent.

*\*leucodice soracta*, M. (50-70). The Himalayan Blackvein. Kashmir—Mussoorie. C. (= *denigrata*, Fr.).

*γ.* Uph discal sagittate band strongly marked in ♀.

*leucodice sara*, nov. Kumaon. C.

3 (2). Uph prominent sagittate discal band. Below darker yellow.

*a.* ♂ above bright lemon yellow; cell upf and below suffused black scales. ♀ white or pale yellow, no black scaling.

*\*nabellica hesba*, Evans. (50-60). The Dusky Blackvein. Chitral. VR.

*β.* ♂ pale yellow ♀ white or nearly so, but densely suffused black scales up to the discal band on both wings, leaving only the margin and an area beyond the cell pale.

*nabellica nabellica*, Bdv. (50-65). Kashmir—Kumaon. R. (= *ferrari*, Tyl.).

4a (2b). Uph margin entirely dark or with nearly conjoined spots at ends veins.

Agathon Group.

4 (5). Above black, half of cell 1b F and 8 H white; prominent discal series white spots curved round cells; submarginal white spots between veins, elongated into double streaks in ♀. Unh alternate black and yellow streaks along margin.

*harrieta*, DeN. (70-80). The Bhutan Blackvein. Bhutan. VR.

5 (4). Upf discal area white, with broad dark veins, nearly conjoined to a band on the disc, grading to an entirely dark form with white discal and post-discal spots.

*a.* Palest form; discal and marginal bands not continuous.

*agathon phryxe*, Bdv. (80-90). The Great Blackvein. Kashmir—Mussoorie. NR.

*β.* Medium form; discal and marginal bands continuous.

*\*agathon caphusa*, M. Mussoorie—Kumaon. NR. (= *ariaca*, M.).

*γ.* Darkest form. Discal pale spots often small. Upf cell always black dusted.

*agathon agathon*, Gray. Nepal—S. Shan States. R.

B6. *Delias*.—The Jezabels. (Plate 8).

1a (5a). Uph and unh no prominent red or yellow spot at base.

Eucharis Group.

1b (3a). Unh yellow, veins not black. Unf veins black.

♂ above white, apex F black, white spotted. ♀ upf black dusted and black veins; upf yellow.

B6. Delias.—The Jezabels. (Plate 8)—*contd.*

1 (2). ♂ upf black apex narrow, with large white spots. ♀ uph dark yellow with narrow dark margin. Unf white marginal spots not below v3; unh white spotted dark margin narrow, width =  $\frac{1}{4}$  length v4.

\**agostina*, Hew. (65-70). The yellow Jezabel. Sikkim—Dawnas. NR. (= *infumata*, Fr.).

2 (1). ♂ upf black apex broad, spots blurred, small. ♀ uph paler. Unh white marginal spots to v1 or 2. Unh border =  $\frac{1}{2}$  v4. *singhapura agorans*, GrS. The Singapore Jezabel. Dawnas. R. β. Unh veins black.

*singhapura singhapura*, Wallace. Dawnas—S. Burma. R.

3a (1b). Unh yellow, veins black; prominent row marginal red spots. Above white, veins black on F in ♂, on F and H in ♀.

3 (4). Unh red marginal spots black bordered and a corresponding black postdiscal line uph.

\**eucharis*, Drury. (70-80). The Common Jezabel. Ceylon. S. India—Kumaon—N. Burma. C.

4 (3). Unh red spots inwardly not black edged. Upf black discal band inclined, meets termen at v2.

a. Paler. ♂ apical dark area reduced. ♀ no dark scales between veins.

*hyparete ethire* Doh. (70-80). The Painted Jezabel. Madras—Bengal. R.

β. Darker. ♀ very variable; upf always much dusted black scales, often only leaving pale apical streaks.

*hyparete hierte*, Hub. Kumaon—Burma. C. (= *indica*, Wall. : *devaca*, M. : *metarete*, But.).

5a (1a). Unh or uph with prominent red or yellow basal markings.

Aglaia Group.

5b (11a). Upf and unh prominent large yellow spot base 7. Above black, white spots.

5c (7a). Cilia F white.

5 (6). Upf yellow basal costal patch reduced to a narrow streak or absent.

*patrui*, Leech. (75). The white fringed Jezabel. C. China to Yunnan and probably N. E. Burma.

6 (5). Upf yellow basal costal patch large.

*lativitta*, Leech. (75). The Broadwing Jezabel. W. China, Yunnan and probably N. E. Burma.

7a (5c). Cilia F dark.

7 (8a). Unh cell patch all yellow, often very small. Unf well defined small white sub-apical spots.

a. Upf prominent yellow tornal area joining a broad white discal band.

*belladonna horsfieldii*, Gray. (70-85). The Hill Jezabel. Kulu—Kumaon. Nepal. Sikkim (high elevations). NR. (= *surya*, Mitis : *hearseyi*, But.).

β. Darker. Upf tornal yellow area reduced, not joining the white discal band, which is narrow.

*belladonna ithiela*, But. Sikkim (low elevations). NR.

γ. Larger and very dark. Upf no yellow tornal area.

B6. *Delias*.—The Jezabels. (Plate 8)—*contd.*

*belladonna lugens*, Jord. Assam.—N.W. Burma. Chin Hills. NR.

δ. Above submarginal and H discal spots large. Uph ternal yellow area in ♂ half way to base. Below spots and ternal area large.

*belladonna selima*, Mitis. N. E. Burma. R. W. China and Yunnan.

η. Smaller. As *horsfieldii*, but unh spots much reduced, spot in cell small.

*belladonna burmana*, Evans. Shan States—Ataran. NR. (= *hedybie*, Jordan)

8a (7). Unh cell patch proximally white: in ♀ uph cell always conspicuously white or grey white streaked.

8 (9a). Tegumen ending in a long and narrow point, with very short lateral prongs.

*subnubila*, Leech, (75). The Chinese Jezabel. W. China, Yunnan and probably N. E. Burma.

9a (8). Tegumen distally roundly dilated, lateral prongs long.

9 (10). Tegumen median prong shorter than the lateral. Unf no well defined subapical spots.

a. Upf whole of outer half of wing white and on uph there are broad white streaks.

*sanaca sanaca*, M. (70-85). The Pale Jezabel. Kulu—Kumaon. NR. (= *flavialba*, Marshall. : *confusa*, Talbot, dark form).

β. Much darker.

*sanaca oreas*, Talbot. Sikkim (high elevations). R.

γ. Paler.

*sanaca perspicua*, Fruh. N.E. Burma. R.

10 (9). Tegumen median prong longer than the lateral. Unf well defined subapical spots.

a. Above white spots larger and less diffuse: ternal yellow area H larger.

*berinda boyleæ*, But (70-85). The Dark Jezabel. Sikkim (high elevations). R. (= *amarantha*, Mitis).

β. Much darker, very like *ithiela*, white markings small. Uph ternal yellow area absent: in ♀ sharply defined narrow white streak in cell. Unh dorsum black.

*berinda berinda*, M. Assam—N.W. Burma. Chin Hills. NR. (The Chinese race *adelma*, Mitis, may occur in N.E. Burma).

11a (5b). Unh basal spot red, not yellow.

11 (12a). Unh red basal marking confined to a spot base 7. ♂ above dead white. ♀ upf black, white spot end cell and row postal discal spots; veins may be broadly pale; uph white to yellow with more or less broad, white spotted, dark border. Below both sexes nearly as ♀ above.

\**descombesi leucacantha*, Fruh. (80-85). The Redspot Jezabel. Sikkim—Burma. NR. (= *auriga*, *leucogæa*, Fr.).

12a (11). Unh red basal marking extends from costa to dorsum.

12(13). Uph no red basal colour. Upf pale spot end cell small, confined to base 4; inner edge pale submarginal streaks in line. Unh outer half cell yellow.

**B6. Delias.—The Jezabels. (Plate 8)—contd.**

\**aglaia*, L. (70-85). The Redbase Jezabel. Nepal. Sikkim—Burma. NR. (= *pasithæ*, L. *beata*, Fr.).

13(12). Uph prominent red basal area. Upf spot end cell very large; pale submarginal streak in 3 shifted in. Unh only extreme end cell yellow.

α. Paler and pale markings more extensive. Uph tornal area pale cream; unh pale area uniform, bright yellow.

*thysbe kandha*, Doh. (80-100). The Redbreast Jezabel. Madras. R.

β. Uph tornal area ochreous. Unh pale area tornally ochreous, apically white.

*thysbe pyramus*, Wall. Simla—Burma. NR.

**B7. Prioneris.—The Sawtooths. (Plate 8).**

1 (2a). Below no red markings. ♂ upf white with broad, white spotted black apex. ♀ as B6.7, but has 4 prominent small white spots in an oblique curve towards end cell, which spots appear unf in ♂ and ♀. Unh black with yellow spots. DSF much smaller and unh almost all yellow.

\* *thestyli*, Db. (70-90). The Spotted Sawtooth. Mussoorie—Burma. NR. (= *watsoni*, Hew. : *seta*, M. *jugurtha*, Fr.).

2a (1). Unh yellow with red markings. Above white, all veins F and outer half H black.

2 (3). Unh prominent marginal row red spots, inwardly black bordered. Almost exactly as B6.3.

\* *sita*, Fd. (80-90). The painted Sawtooth. Ceylon, S. India. R.

3 (2). Unh white or yellow spots along margin; prominent red spot at base. ♀ upf veins broad black towards apex; unh post-discal and submarginal dark band.

\* *clemanthe*, Db. (80-90). The Redspot Sawtooth. Sikkim—Burma. R. (= *helferi*, Fd.).

**B8. Belenois.—The Pioneers. (Plate 7).**

Above white, black spot end cell, dark apex F and margin H. Unh yellow with black veins.

α. Above dark apex F and margin H very broad, obscurely white spotted in ♂, unspotted in ♀; costa above cell F dark. Unh dark orange.

*mesentina taprobana*, M. (40-55). The Pioneer. Ceylon. C. (= *fervidior*, Fr.).

β. Above dark apex F and margin H broadly white spotted (DSF more than WSF). Unh bright yellow (WSF) to white (DSF); margin narrow and with large spots of the ground colour.

\* *mesentina mesentina*, Cr. All India except Assam. C. (= *lorduca*, Walker. : *aurigena*, But.). Straggler recorded from Great Nicobar.

B9. *Huphina*.—The Gulls. (Plate 8).

Above white, more or less black veined.

1a (3). Unf always black spot mid 3, separated from the black border by a white spot.

1 (2). Uph tornal area broad orange. Unh bright yellow with broad brown border and apex unf.

\* *lea*, Db. (40-55). The Orange Gull. Karens—S. Burma. C. (= *continentalis*, Rüb.)

2 (1). Uph no tornal orange area.

a. Small. Upf black apex prominently white spotted, often yellow in WSF ♀

*nerissa evagete*, Cr. (40-55). The Common Gull. Ceylon, S. India—Central Provinces and Bengal. C. (= *zeuxippe*, Cr).

β. Large. Upf black apex practically unspotted, spotting never yellow. ♀ uph submarginal markings grey.

\* *nerissa phryne*, F. (50-65). Sikkim—Assam. C. (= *coronis*, Cr. : *hira*. M. *pallida*, Swin.)

γ. Small. Upf black apex unspotted. Unh DSF white with broad grey veins. WSF unf basal half costal margin and unh costal and dorsal margin suffused bright yellow or greenish.

*nerissa dapha*, M. (50-60). Burma. C. Straggler on Central Nicobars. (= *copia*, Wallace).

δ. Large. Upf margin unspotted. Unh mostly moss green with pale streaks between veins very narrow or absent.

*nerissa lichenosa*, M. (55-65). Andamans. C.

3 (1a). Unf no detached black spot mid 3.

a. Unh no pale streak in or beyond cell; WSF very dark green with broad dark brown discal area.

*nadina cingala*, M. (55-65). The Lesser Gull. Ceylon. R.

β. Unh paler; DSF pale yellow brown with darker discal areas; WSF base broad yellow, outer area dark brown.

\* *nadina remba*, M. S. India. R. (= *liquida*, Swin.).

γ. Unh WSF long pale streak in cell and extending into bases 4 and 5; DSF very pale with brown dark veins. Upf dark apex narrower.

*nadina nadina*, Luc. Sikkim—Burma. NR. (= *nama*, *amboides*, M. : *amba*, Wallace).

δ. As γ, unh pale streak shorter, confined to end cell and bases 4 and 5.

*nadina andamana*, Swin. Andamans. NR.

B10. *Appias*.—The Puffins and Albatrosses. (Plate 8).

1a (6a). F upper apex cell right angled.

1b (4a). Unh always a tiny black spot at end cell and minute black spots on termen between veins.

Lalage Group.

1 (2a). Upf no white spots on the black apex; a black spot end cell and traces of a spot mid 3; in ♀ prominent spot mid 3 conjoined to apical black band. Uph ♀ black marginal spots. Apex F produced and margin crenulate below. ♂ no abdominal hair pencils, as in rest.



B10. Appias.—The Puffins and Albatrosses. (Plate 8)—*contd.*

\**lalassis*, GrS. (65-75). The Burmese Puffin. S. Shan States—S. Burma. R. (= *indroides*, Hon.).

2a (1). Upf always white markings on the black apex. Apex F produced, margin faintly crenulate below.

2 (3). Unf always large black spot end cell. Uph and unf large black spots mid 3, separated from dark margin by a white spot.

a. Upf ♂ black spot end cell separated from spot mid 3; ♀ continuous dark band from base cell absorbing spot end cell and mid 3; in DSF this band indicated.

\**lalage lalage*, Db. (55-80). The Spot Puffin. Mussoorie—Tavoy. NR. (= *argyridina*, But.: *durvasa*, *pseudolalage*, M. *confluens*, Fr.).

β. Upf ♂ with dark band as in ♀ of a.

*lalage lagela*, M. Mergui—S. Burma, R.

3 (2). Unf no large black spot end cell. Upf and unf no detached spot mid 3.

a. Upf only two white spots on the black border. Unf ♂ black preapical band as wide as pale apex. ♀ uph only base 4 white.

\**indra narendra*, M. (60-70). The Plain Puffin. Ceylon. R.

β. Paler below. ♂ uph no black terminal spots.

*indra shiva*, Swin. S. India. R. (= *statilia*, Fr.).

γ. Upf DSF ♂ complete row apical white spots. Unf black preapical band =  $\frac{1}{2}$  width pale apex. ♀ uph bases 4 and 3 white. Below much paler.

*indra indra*, M. Nepal—Burma. NR. (= *imbecilis*, *mahana*, M.).

4a (1b). Unh no small black spot end cell nor on termen between veins, F apex produced in ♂; termen never crenulate. In ♂ veins at apex upf black; in ♀ cell all dark and joined to marginal dark band along 4.

Libythea Group.

4 (5). Unh no broad dark chocolate marginal area.

a. Small, ♂ upf veins only dark at margin and not inwardly edged by a dark band. Below white or pale yellow. ♀ upf no pale spots on the dark border.

*libythea libythea*, F. (50-60). The Striped Albatross. Ceylon, India. R. (= *zelmira*, Cr. *ares*, *retexta*, Swin.).

β. Large, ♂ upf dark veins more extended at apex, inwardly bordered by a narrow dark band. WSF below pale yellow brown to white; veins dark at apex unf, as well as v8 mv and v7 unh, a narrow curved dark band through end cell beyond which all veins are dark. In DSF underside may be unmarked. ♀ upf prominent white spots on the dark border; unh in WSF dark veins and band broad yellow.

\**libythea olferna*, Swin. (55-65). Bengal—Assam—Burma. Car Nicobar. R. (= *irvinii*, Swin: *sopara*, Fr.).

5 (4). Unh yellow, margin broadly dark chocolate. ♂ uph dark margin inwardly bluish edged. Unf prominent yellow apical spot on the dark margin. ♀ mostly blackish brown: upf prominent white stripes in 1b and 2, 4 and 5; uph discal area whitish.

B10. Appias.—The Puffins and Albatrosses. (Plate 8)—*contd.*

*a.* ♂ above dark margins very broad and inwardly very dentate.  
*lyncida taprobana*. M. (55-70). The Chocolate Albatross.  
 Ceylon. R. (= *aperta*, But.).

*β.* ♂ above dark margin narrow and still inwardly dentate; unh dark margin very broad, reaches end cell; vs 6 and 7 prominently dark brown.

*lyncida latifasciata*, M. S. India. R.

*γ.* Above ♂ variable, margin hardly dentate on H. Unh dark margin very narrow. WSF large; DSF small.

\* *lyncida hippoides*. M. Sikkim—Burma. C. (= *vacans* But : *epicæna*, Swin; *lurida*, Cr.).

*δ.* Paler. Unf apical spot on dark border white. ♀ uph outwardly greenish.

*lyncida nicobarica*, M. Car and Central Nicobars. NR.

*η.* ♂ uph grey marginal band much wider. ♀ much darkened.

*lyncida galbana*, Fruh. South Nicobars. NR.

6a (1a). F upper apex cell highly acute.

Albina Group.

6b (8, 9). ♂ above white; ♀ white or yellow, spotted black apex on upf.

6 (7). ♂ upf no postdiscal black spot in 3. Apex F pointed and termen straight. ♂ upf blackish scaling at apex and base very narrow or absent. ♀ always 5 apical spots; unf inner edge dark apical area irregular, space 5 broadly pale at base.

*a.* ♀ typically white; 2nd form yellow both sides. 3rd form yellow unh. Smaller.

*albina principalis*, Fr. (55-70). The Common Albatross. Ceylon. NR. (= *norma*, Evans).

♀ *v.* *flava*, Rob. NR.

♀ *v.* *semiflava*, Fr. NR.

*β.* ♀ always white above; 2nd form yellow below. Larger.

\* *albina darada*, Fd. (60-75). S. India—Sikkim—Burma. Andamans. R. (= *confusa*, Fr. : *swinhoei*, M.).

♀ *v.* *semiflava*, Fr. R.

7 (6). ♂ upf except in *a* with a black spot in 3.

*a.* ♂ very like No. 6, but black scaling more extensive and may even enclose a black spot in 3; apex not so sharp and termen concave. ♀ not more than 3 spots on the dark apex; below typically white, but 2nd form is yellow with more or less distinct discal black spots unh; inner edge black apical area regularly curved and at most only just enters base 5.

*paulina, galene*. Fd. (55-75). The Lesser Albatross. Ceylon. NR. (= *neombo*, Bdv. : *venusta*, M. : *fasciata*, Fr.).

♀ *v.* *lankapura*. M. NR.

*β.* ♂ upf dark apex encloses 5 pale spots, costa black. ♀ as typical form of *a*.

*paulina wardii*, M. S. India. R. (= *yaksha*, Fr.).

*γ.* ♂ as *β* but very variable; unf spot in 3 prominent, though rest of black apex may be absent. ♀ WSF as ♀ of *β*, but usually 4 spots on the black apex; DSF as ♂.

*paulina adamsoni*, M. Burma. NR. (= *melania*, Auct.).

**B10. Appias.—The Puffins and Albatrosses. (Plate 8)—contd.**

♂. ♂ upf and unf unmarked except for black spot in 3, which may be obsolete above. ♀ as ♀ of γ and distinguished from ♀ of No. 6 α by space 5 being all dark unf. 4 ♀ forms occur, viz., both sides white or yellow, white above and yellow below and *vice versa*.

\* *paulina galathea*, Fd. All Nicobars. NR. (= *roepstorffii*, M.).

8 (6b, 9). Above orange to deep crimson lake. ♂ upf with apex blackish and more or less prominent black spots between veins on disc. ♀ broad black margin F and H and irregular black discal band.

\* *nero galba*, Wall. (65-80). The Orange Albatross. Sikkim—Burma. R. (= *figulina*, But. : *nebo*, GrS).

9 (6b, 8). Above yellow; ♂ paler on F. ♂ upf termen and costa narrow black. ♀ broad dark terminal and costal margin F and termen H. Unh whitish. F v8 short in ♂, absent in ♀

*panda chrysea*, Fruh. (50-60). The Nicobar Albatross. South Nicobars. NR.

**B11. Catopsilia.—The Emigrants. (Plate 9).**

1a (4a). Below not closely striated with brown strigæ.

1b (3). Uph pale-yellow or white. ♂ without, ♀ with, post-discal dark band upf and spot end cell.

1 (2). Antennæ black. ♂ upf very narrow continuous black margin below apex and edge costa narrow black to base; below yellow, unmarked. ♀ very variable, but always with costa black from apex to base, usually conjoined to spot end cell.

\* *crocale*, Cr. (55-75). The Common Emigrant. Ceylon, India, Burma, C. Andamans. R. (= *alcmeone*, *jugurtha*, Cr. : *hira*, Swin. : *flavescens*, Fr.).

2 (1). Antennæ red. ♂ upf narrow black margin below apex macular and edge costa only black at apex; below greenish-white with prominent red ringed silver spot end cell F and H and base 5H. ♀ more sulphur yellow above, marginal band narrow and inner edge dentate; costa only black near apex; below often with large reddish-purple blotches end cell F and above end cell H.

*pomona*, F. (55-80). The Lemon Emigrant. Ceylon, India, Burma, C. Andamans. Nicobars. R. (= *aserrata*, *ciscia*, *citronella*, *nivescens*, *serrata*, Fr.).

♀ *v. catilla*, Cr. With purple blotches below. C.

3 (1b). Uph entirely orange. Below sulphur yellow.

\* *scylla*, L. (60-65). The Orange Emigrant. S. Burma. C.

4a (1a). Below closely covered brown strigæ.

4 (5). Uph marginal dark border below apex continuous and often broad. Above greenish white.

*pyranthe minna*, Herbst. (50-70). The Mottled Emigrant. Ceylon, India, Burma. C. Andamans. R. (= *alcyone*, Cr.).

5 (4). Uph marginal dark border below apex macular, always narrow, sometimes brown. Above white.

\* *florella gnoma*, F. (50-70). The African Emigrant. Ceylon, India, Burma. C. Andamans. R. (= *chryseis*, But.).

**B12. Gandaca.—The Tree Yellow. (Plate 9).**

♂ pale-yellow; ♀ nearly white. Unmarked except for black apex and margin upf.

a. Upf dark margin narrow, not below v4 or 3.

*harina assamica*, M. (35-45). The Tree Yellow. Sikkim—Assam. NR.

β. Upf dark margin wider, to v3 or dorsum.

\**harina burmana*, M. Burma. NR.

γ. Always larger. Border moderately broad.

*harina andamana*, M. Andamans. NR.

δ. ♂ paler and border upf reduced. ♀ pale-yellow instead of white.

*harina nicobarica*, nov. All Nicobars. R.

**B13. Dercas.—The Sulphurs. (Plate 9).**

1 (2). H angled at v4. Upf and unf large dark apical patch, extending below v 5.

a. Large, ♂ strongly crenulate at and below apex. ♀ pale-yellow to white.

\**verhueli doubledayi*, M. (60-70). The Tailed Sulphur. Sikkim—N. Burma NR. (= *pallidus*, Fr).

β. Much smaller. ♂ termen not produced at apex and only slightly crenulate below. ♀ white.

*verhueli parva*, Evans. (50-60). Dawnas—S. Burma. R.

2 (1). H not angled at v4. F apical dark patch very small, not below v6. Upf prominent dark-brown spot in 3.

\**lycorias*, Db. (50-60). The Plain Sulphur. Sikkim—Assam. R. (= *wallichii*, Db).

v. *deciens*, DeN. Upf spot in 3 absent. (= *brindaba*, Swin.).

**B14. Gonepteryx.—The Brimstones. (Plate 9).**

1a (3). F: v6 nearer end cell than junction of 7 and 8; dcvs angled at their junction. Wings not crinkly. H termen not toothed at v4.

1 (2). ♂ above uniform sulphur yellow; ♀ creamy-white. Uph orange spot end cell prominent and not dark edged. Below ♂ pale yellow green, ♀ greenish white.

a. Paler: median spots smaller: marginal dots smaller and not united upf.

*ramni ramni*, L. (60-70). The Common Brimstone. Baluchistan. N. Waziristan. NR.

β. Richer yellow, median spots brighter: marginal dots more distinct and form a continuous line upf.

\**ramni nepalensis*, Db. Chitral—N. Burma. C.

γ. ♂ as last. ♀ above base costa and apex upf, dorsum and termen to v4 uph, tinged yellow.

*ramni gilgitica*, Tyt. Gilgit, Astor, Chilas. C.

δ. ♀ yellow.

*ramni burmensis*, Tyt. S. Shan States. NR.

**B14. Gonepteryx.—The Brimstones. (Plate 9)—*contd.***

2\*(1). ♂ above basal  $\frac{1}{2}$  F yellow, outer  $\frac{1}{2}$  and all H, except base white. ♀ chalky white. Above no spot end cell F, on H obscure brown. Below pale yellow, no green tinge; small discal brown spots prominent towards apex F and on H. H tooth at v3 twice as long as tooth at v2.

*farinosa chitralensis*, M. (55-60). The Chitral Brimstone. Chitral. R.

3 (1a). F v6 nearer junction 7 and 8 than end cell; 11 and 12 close; dcvs in line. Wings crinkled. H termen prominently toothed at v1, between 1 and 2, v2, long tooth at 3 and 4.

a. ♂ upf yellow, uph cream-white. ♀ F and H cream-white. Above orange spots end cells smaller and dark ringed, F costa concave in middle.

*aspasia zaneka*, M. (50-55). The Lesser Brimstone. Kashmir—Kumaon. NR.

β. ♂ above yellow, paler outwardly; ♀ pale yellow-white. F. costa straight.

*aspasia zanakoides*, DeN. S. Chin Hills. R.

**B15. Terias.—The Grass Yellows. (Plate 9).**

1a (1a). Below no ring spot end cells and no spots in cell F. Upf black border not continued along v1.

1 (2). Unf 2 small spots end cell. No ♂ brand. Above black border F and H usually broad and inner edge regular.

Libythea Group.

\* *libythea*, F. (30-40). The Small Grass Yellow. Ceylon, India, Burma, VC. (= *drona* M.: *rubella*, Wallace).

2 (1). Unf single small spot end cell. ♂ uph base 7 and unf base 1b salmon brand.

Læta Group.

WSF Upf marginal band reaches dorsum. Upf black margin to v1 or further. Apex F rounded. DSF Upf marginal band ends at v2. Upf dark margin consists of only 2 spots at apex. Apex F sharply angled, termen straight; H apex produced.

a. Always smaller.

*læta læta*, Bdv. (30-40). The Spotless Grass Yellow. Ceylon, India. VC. (= *cingala*, *pallitana*, *rama*, WSF *venata* M.).

β. Always larger.

*læta sikkima*, M. (35-45). Sikkim—Burma. VC. (= DSF *pseudolæta*, Fr.).

(Note. Col. Morse has just proved that *læta* and *venata* are seasonal forms of the same species).

4a (1a). Below large irregular ring spot end cell F and H. ♂ unf narrow grey brand either side of mv from base to origin v2. Upf black margin always to tornus and continued along v1; except in DSF excavated between vs 2-4.

Hecabe Group.

4b (9). Upf margin not continued along dorsum to base.

4 (5a, 7a). Unf 3 spots in cell. Unh usually spot extreme base 7.

a. Upf black margin always comparatively broad.



**B15. Terias.—The Grass Yellows. (Plate 9)—contd.**

*blanda silhetana*, Wall. (40-50). The Three Spot Grass Yellow. Ceylon, India, Burma, Andamans. C. (= *heliophila*, But. : *cadelli*, *dauidsoni*, *grandis*, *ræpstorffii*, Swin : *rotundalis*, *uniformis*, *citrina*, M. : *templetoni*, But.).

β. Upf margin very narrow, inwardly evenly curved.

*blanda moorei*, But. Car & Central Nicobars. R.

γ. Upf margin still narrower and grey scaled between the veins.

*blanda grisea*, nov. South Nicobars. NR.

5a (4, 7a). Unf 2 spots in cell, but one or even both may be absent. DSF with rusty spots below as in No. 4.

5 (6). Unf apical area not entirely brown.

α. Generally smaller and yellower.

*hecabe simulata*, M. (40-50). The Common Grass Yellow. Ceylon, South India. C.P. VC. (= *æsiopiodes*, M. : *asphodelus*, *narcissus*, *swinhœi*, But.).

β. DSF with very narrow margin upf.

\* *hecabe fimbriata*, Wall. Punjab—Chitral—Kumaon. VC. (= *simplex*, But. : *apicalis*, *excavata*, *irregularis*, *purreea*, M.).

γ. Generally larger.

*hecabe hecabe*, L. Bengal—Sikkim—Burma. Andamans. VC. (= *hecabeoides*, Men. : *contubernalis*, *fraterna*, *kana*, *merguiana*, *patruelis*, *pulla*, M. : *curiosa*, *blairana*, Swin.).

δ. Paler : upf border restricted.

*hecabe nicobariensis*, Fd. All Nicobars. VC.

6 (5). Unf apical area entirely brown.

*lacteola sarinoides*, Fr. (40-50). The Scarce Grass Yellow. Sikkim—S. Burma. R.

7a (5a, 4). Unf a single zigzag spot in cell and a spot towards tornus in lb. Below not speckled with scattered black scales apart from the markings; never with rusty spots; unf apex always marked with brown; unh never a spot base 7.

7 (8). Unf apex never entirely dark.

α. Uph dark margin very narrow and discontinuous.

*andersoni ormistoni*, Watkins. (40-45). The One-spot Grass Yellow. Ceylon. S. India. R.

β. Uph dark margin broader and continuous.

\* *andersoni andersoni*, M. Sikkim—S. Burma. NR.

γ. Upf inner edge of dark margin produced in 8 causing it to be at right angles to the costa, instead of evenly curved.

*andersoni andamana*, Swin. Andamans, NR.

8 (7). Unf apex entirely and broadly dark chocolate.

*sari sodalis*, M. (40-45). The chocolate Grass Yellow. Dawnas—S. Burma. NR.

9 (4b). Upf black margin continued along dorsum to base. Unf no spot in cell and unh discal band in a regular line.

*tilaha*, Hors. (40-45). The Malay Grass Yellow. Mergui. VR.

**B16. Colias.—The Clouded Yellows. (Plate 9).**

1a (10a). Above yellow, orange-yellow or white.

1b (4a). Unh spot end cell white. Unf spot end cell not pale centred.



B16. *Colias*.—The Clouded Yellows. (Plate 9)—*contd.*

1 (2a). Upf no spot end cell. ♂ pale sulphur yellow with uniform broad black border. ♀ paler with yellow marginal spots.

*marcopolo*, GG. (42). Marcopolo's Clouded Yellow. Thui Nallah, Gilgit. VR.

2a (1). Upf always dark spot end cell.

2 (3). Cilia and costa F and H white. Above ♂ pale greenish, with black veins; ♀ white to pale greenish on F. Upf pale marginal spots complete, but spot in 3 smaller than rest. Uph spot end cell white; traces of postdiscal and marginal dark band or spots. Unf decreasing discal black spots 1-3. Unh green, margin pale.

*alpherakii chitralensis*, Ver. (50-55). The Green Clouded Yellow. Chitral. VR.

3(2). Cilia and costa F and H pinkish as in rest. ♂ above orange yellow, margins spotless and very broad up to cell F. ♀ varies from whitish to yellow or orange, margin F obscurely spotted in 2, 4 and 5. Uph much darkened, prominent orange spot end cell. Unf decreasing discal spots in 1-3. Unh uniform green, margin not paler.

*viskotti*, Stg. (50-55). The Broad-bordered clouded Yellow. Chitral. VR.

4a (1b). Unh spot end cell never entirely white. Unf spot end cell with a pale centre.

4b (9). Uph broad pale border or a complete row of pale spots. Unh a reddish brown dash beyond the white cell spot.

4 (5a). Above white to greenish yellow, more or less overlaid black scales, pale border spots small. Below greenish, no conspicuous pale border H. Very variable.

*cocandica hinducucica*, Ver. (35-45). The Pamir clouded yellow. Misgah, Hunza. R.

5a (4). Upf clear yellow or orange yellow.

5b (7a). Upf marginal spots large, complete and of equal size.

5 (6). Uph no pale spot end cell and margin entirely pale. Above ♂ lemon yellow, ♀ yellowish white. Upf submarginal spots joined to margin. Unf complete postdiscal row dark spots. Unh greenish brown, broad pale yellow margin, inwardly bordered obscure dark spots on the dark area.

*thrasibulus*, Fruh. (35-45). The Lemon Clouded Yellow. Ladak. VR. (= *ekwesi*, Rob.: *leechi*, El.).

6 (5). Uph usually orange spot end cell and at least with blackish spots near apex. Above ♂ bright yellow, ♀ orange yellow. Upf yellow submarginal spots not joined to the margin. Unf discal black spots only in 1-3. Unh dark green margin broadly paler.

*ladakensis*, Fd. (45-50). The Ladak Clouded Yellow. Kashmir—Kumaon R. (= *shipkee*, M.).

ab. *flava*, Riley. Kumaon. Orange yellow.

7a (5b). Upf marginal spots nearer complete or equal, only upper part of spot in 1b present and spot in 3 small or absent.

7 (8). Upf ♂ clear yellow, ♀ tinged orange. Uph darkened, prominent yellow spot end cell, pale border continuous. Unf yellow. Unh yellow, pale border inconspicuous.

B16. *Colias*.—The Clouded Yellows. (Plate 9)—*contd.*

\* *berylla*, Fawcett. (45-55). The Everest Clouded Yellow. Sikkim—Thibet border. NR. (*pulchra*, Ver, Gyantse race).

8 (7). Upf orange yellow. Uph darkened, prominent orange spot end cell, separated pale spots on border. Unf orange, Unh greenish pale border spots from above showing faintly.

*nina*, Fawcett. (45-55). Fawcett's Clouded Yellow. Sikkim—Thibet border. NR. (*hingstoni*, Riley, Everest race).

9 (4b). Uph not darkened, postdiscal band and submarginal yellow spots not below v6, but the marginal dark band may be very broad and continuous; spot end cell orange. Unh yellow, more or less black dusted and with a discal row of brown spots: white spot end cell circular, ringed dark red.

a. ♂ unf dark apex broader, with pale spots small; above yellow. ♀ white, base F and all H dusky, border F as ♂.

*hyale nilagiriensis*, Fd. (45-50). The Pale Clouded Yellow. S. India. C.

β. Very variable, ♀ typically yellow with margin upf spotted; ♂ typically as ♀.

*hyale hyale*, L. (45-55). Baluchistan—Chitral—Kumaon. C.

\* ♂ *v. erate*, Esp. Upf dark margin unspotted. NR. (= *lativitta*, M.: *glicia*, Fr.).

♀ *v. pallida*, Stg. White. C.

*v. chrysodona*, Bdv. Orange yellow. Baluchistan—Chitral. R.

10a (1a). Above orange red or orange.

10b (14). Uph no brand in ♂.

10 (11a). Unh glaucous bluish green, no crimson dash alongside the white cell spot. Above ♂ dusky orange, border spotless: ♀ uph darkened, borders with diffuse dusky yellow spots.

*leechi*, GG. (40-50). The Glaucous Clouded Yellow. Karakoram. R.

11a (10). Unh greenish, cell spot prominently flanked deep crimson.

11 (12a). Unh veins pale, dark discal spots absent or obscure. ♂ above orange red with violet gloss, borders spotless. ♀ borders yellow spotted: uph black, prominent red cell spot.

a. Comparatively small. ♂ upf cell spot very narrow, hardly more than the black dcu.

*eogene shandura*, Evans. (40-50). The Fiery Clouded Yellow. Chitral, Hunza, W. Karakoram. NR.

β. Larger, with broader borders. Upf spot end cell prominent.

*eogene francesca*, Watkins. (45-55). Baltistan. Kashmir. NR.

♀ *v. cana*, GG. Above bluish-white.

γ. Small. Upf spot end cell prominent.

*eogene eogene*, Fd. (40-50). E. Karakoram, Ladak, along interior Himalayas to Kumaon. R.

12a (11). Unh veins not pale and dark discal spots usually prominent. Above clear orange.

12 (13). ♂ border spotless. ♀ uph blackish, orange spot end cell prominent and elongate towards termen.

a. ♂ above black border broad.

*stoliczana stoliczana*, M. (40). The Orange Clouded Yellow. Kashmir, Ladak. NR. (= *alba*, Ver, an ab).

**B16. Colias.—The Clouded Yellows. (Plate 9)—contd.**

β. ♂ above black border narrow. ♀ upf veins black: uph all black except for orange spot end cell and marginal orange spots. *stoliczana miranda*, Fruh. Sikkim, Chumbi Valley. VR.

13 (12). ♂ ♀ with yellow spotted border. Upf only discal area blackish. Upf marginal yellow spots conjoined to termen by narrow yellow lines.

*dubia*, Elwes. (40). The Dwarf Clouded Yellow. Sikkim, Chumbi Valley. VR.

14 (10b). ♂ uph a yellow band base 7. Above bright orange, ♂ border spotless, ♀ yellow spotted. Unh greenish yellow: prominent double, red-edged silver spot end cell and discal row red spots.

a. Small. Bright orange.

*croceus edusina*, But. (45-50). The Dark Clouded Yellow. Baluchistan—Chitral—Kumaon. N. Punjab. C.

β. Large. ♀ often orange pinkish.

*croceus fieldii*, Men. (45-65). Sikkim—N. Burma. NR.

(Note. *phicomone phila*, Fruh. was described in error from Kashmir).

**B17. Ixias.—The Indian Orange Tips. (Plate 9).**

1 (2). Above white. ♂ ♀ upf apical band always orange. WSF ♂ preapical orange patch enters upper end cell and reaches below v2. DSF orange patch not into cell or below v2.

*marianne*, Cr. (50-55). The White Orange Tip. Ceylon—S. India—Punjab and Kumaon. C. (= *agnivena*, M.: *depalpura*, But.: *cumballa*, *meridionalis*, *nola*, Swin.).

2 (1). Above yellow; orange patch not below v2. ♀ may be white.

a. Small. Upf base of 3 and half of 2 yellow. ♀ yellow, band orange to yellow.

*pyrene cingalensis*, M. (50-60). The Yellow Orange Tip. Ceylon. C. (= *connectens*, *nivescens*, Fr.).

β. Similar. ♂ apical band broader and not angled in ♀.

*pyrene frequens*, But. S. India—Bengal. C. (= *colaba*, *jhoda*, Swin.).

γ. Small usually. Upf base 3 rarely yellow; half to two-thirds of 2 yellow. ♀ often white.

\* *pyrene satadra*, M. Baluchistan. Sind. Punjab—United Provinces—Chitral—Kumaon. C. (= *dharmasale*, *æatti*, But.: *kausala*, *pygmæa*, M.).

δ. Often large, very variable. Upf orange enters lower end cell; base 3 never yellow and only extreme base 2. ♀ very variable sometimes nearly entirely suffused black scales on a white ground and the apical band white; or ground colour yellow and the band white.

*pyrene pirenassa*, Wall. (55-70). Sikkim—Assam. C.

η. Smaller than last and more or less intermediate between last two. Orange colour not in lower edge cell. ♀ band yellow or orange and ground colour often white.

B17. *Ixias*.—The Indian Orange Tips. (Plate 9)—*contd.*

*pyrene latifasciata*, But. (50-60). N. Burma—Dawnas. C. (= *verna*, Druce; *citrina*, *pallida*, *moulmeinsis*, M.).

♂. Much paler, lemon yellow. Orange area often clouded, presenting a dull frosted appearance. ♀ band always orange; cell F more or less black. Much more constant.

*pyrene meipona*, GrS. (50-60). Dawnas—S. Burma. C.

♀. As last, larger. Orange apex deeper and not so wide; often yellow spot base 3.

*pyrene andamana*, M. (55-65). Andamans. C. (= *lena*, Swin.).

B18. *Colotis*.—The Arabs. (Plate 9).

1a (4a). Upf prominent dark spot end cell, which is always conjoined to the dark costal area extending to base. ♂ dorsum F more or less bowed.

*Amata* Group.

1 (2a). Upf marginal dark band shifted in 1b, so as to enclose a large pale spot. Above salmon, margins broad black, spotted with the ground colour. ♂ uph costa broad black and the scales towards base 7 modified.

a. Upf semi-detached spot in 1b small, not quadrate; pale spots on margin small.

\* *amata modesta*, But. (35-45). The Small Salmon Arab. Ceylon—S. India—Bengal. NR.

♀ *v. albina*, Evans. Above white. NR.

β. Upf semi-detached black spot in 1b large, quadrate; pale spots on margin large.

*amata amata*, F. (35-50). Bombay—Sind and Baluchistan—United Provinces. Punjab. NR. (= *calais*, Cr.: *cypraea*, F.: *carifer*, But.: *dynamine*, Klug.: *kenedii*, Swin.).

2a (1). Upf dark margin regular to dorsum, bearing no pale spot below v3 F and H.

2 (3). Above salmon, black border bearing bluish spots at apex upf; base F and dorsum H suffused blue grey. ♂ uph large salmon brand base 7; unf similar small patch near base 1b.

*protractus*, But. (40-45). The Blue Spotted Arab. Cutch—Sind—Baluchistan—Punjab. NR. (= *phisadia*, Auct.).

3 (2). Above white; black border upf shifted in in 3, enclosing large white spot. No ♂ brand.

\* *vestalis*, But. (40-50). The White Arab. Baluchistan—United Provinces. NR. (= *intermissus*, *ochreipennis*, *puellaris*, But.: *dubius*, *peelus*, *rorus*, Swin.).

4a (1a). Upf dark spot end cell, if present, detached (except rarely ♀ of No. 4 a.); dark border only reaches dorsum narrowly or not at all.

4 (5a). Above salmon, ♀ may be white; uph unmarked except for dark margin. Upf prominent spot end cell and dark apex with spots of the ground colour. ♂ unf prominent dark brown brand towards base 1, correlated to a nacreous area base costa uph.

*Fausta* Group.

## B18. Colotis.—The Arabs. (Plate 9)—contd.

a. Upf black apical area encloses 3 spots and reaches tornus. ♀ white.

\* *fausta fulvia*, Wall. (45-55). The Large Salmon Arab. Ceylon—S. India. NR. (= *palliseri*, *tripuncta*, But. : *surya*, M.).

β. Upf black apical area not enclosed at lower end and not to tornus. ♀ pale salmon.

*fausta fausta*, Oliv. Bombay—Baluchistan. Central India—Punjab. NR. (= *faustina*, Fd. : *oriens*, *rosaceus*, *solaris*, But.).

5a (4). Above white with orange or crimson apex (except sometimes ♀ of No. 6). No ♂ brand. ♀ uph more or less dark discal band, always indicated at costa.

Eucharis Group.

5b (7). Upf apex orange and not marked with black spots in ♀.

5 (6). Upf apical orange patch inwardly dark edged; in ♀ dark band upf decreasing evenly to tornus.

a. Upf black edging broader. Uph marginal spots conjoined to form a continuous band.

*etrida limbata*, But. (25-45). The Little Orange Tip. Ceylon. C.

β. Not so heavily marked.

\* *etrida etrida*, Bdv. S. India—Himalayas. Baluchistan. C. (= *bimbura*, *casimirus*, *farinus*, *pernotatus*, *purus*, But.).

6 (5). Upf ♂ inner edge apical orange patch not black edged, or, if so very faintly and a dark band shows through by transparency from unf on the orange area. ♀ upf very irregular postdiscal band from costa to v3, between which and the narrow dark margin are 4 pale orange or white contiguous spots.

*eucharis*, F. (40-45). The Plain Orange Tip. Ceylon—Central India. C. (= *pullens*, M. : *pseudevanthe*, But.).

7 (5b). Upf crimson tip, inwardly black edged. ♀ bases suffused blackish scales, apical patch crimson to pale red and bearing a dark postdiscal band on the crimson area.

a. Dark edging to crimson tip broader and margin uph continuous black in WSF.

\* *danæ danæ*, F. (40-50). The Crimson Tip. Ceylon. S. India—Central Provinces. NR. (= *sanguinalis*, But. : *taplini*, Swin.).

β. Inner edging to crimson tip narrower; margin uph macular. *danæ dulcis*, But. Sind. Baluchistan. NR. (= *dirus*, *eboroides*, But. : *alberta*, *immaculata*, *subroseus*, Swin.).

## B19. Hebomoia.—The Great Orange Tip. (Plate 9).

Large. White. Upf broad orange tip, bearing postdiscal black spots; in ♀ black spots conjoined or nearly so, so as to leave a submarginal series of orange spots.

a. Inner black edging to orange apex obsolete.

*glaucippe ceylonica*, Fruh. (80-100). The Great Orange Tip. Ceylon. C.

β. Inner black edging to orange tip narrow.

*glaucippe australis*, But. S. India. C.

γ. Inner black edging to orange tip broad.



B19. *Hebomoia*.—The Great Orange Tip. (Plate 9)—*contd.*

- \* *glaucippe glaucippe*, L. Nepal—Burma. C. (= *aturia*, Fr.).  
 ♂. Inner black edging to orange tip obsolete. Above outer half H and lower discal area F pale yellow.  
*glaucippe roepstorffii*, WM. Andamans. C.

B20. *Pareronia*.—The Wanderers. (Plate 9).

♂ above blue with black borders. ♀ black with blue streaks between the veins.

1 (2a). Pale. Upf ♂ margin unspotted; no pale streak in 9; all veins not prominently black and uph mv no darker than scv. ♀ upf submarginal spots and outer ends discal streaks in line; no streak in 9; uph submarginal spot in 6 and discal streak conjoined.

a. DSF small; WSF large. ♂ uph border narrow.

\* *avatar avatar*, M. (60-90). The Pale Wanderer. Sikkim—N. Burma. R. (= *tarina*, Fr.).

β. Small. ♂ uph border wide. ♀ pale streaks wider, streak in 1 joins lower submarginal spot in 1.

*avatar paravatar*, DeN. (60-70). S. Burma. R.

2a (1). ♂ darker; nearly always pale streak in 9; all veins prominently black; uph mv much wider black than scv and bearing modified scales, in line with v6, which is also very wide, as also is v6 usually. ♀ upf submarginal spot and discal streak in 3 shifted in; always streak in 9, which with streaks in 4, 5 and 6 form an oblique row. Uph submarginal spot and discal streak in 6 separate.

2 (3). ♂ above margins usually unspotted; if spotted, spots very small and not increasing to apex; WSF much rounder. ♀ usually bluer, submarginal spots smaller, uph submarginal spot in 7 prominently larger than rest.

a. ♂ upf no prominent white spot at apex.

*ceylanica ceylanica*, Fd. (65-80). The Dark Wanderer. Ceylon—S. India. NR. (= *compacta*, But. : *fraterna*, *pingasa*, *spiculifera*, M.).

β. ♂ upf always small white spot at apex. ♀ whiter.

*ceylanica naraka*, M. Andamans. C.

3 (2). ♂ upf margins prominently spotted and spots increasing to apex, ♀ whiter, marginal spots prominent; cilia much whiter and upf apex paler.

\* *valeria hippia*, F. (65-80). The Common Wanderer. India—Burma C. (= *gaea*, Fd.).

♀ v. *philomela*, F. Uph discal area yellow. R. (= *livilla*, Fr.).



## C. DANAIDÆ

## C. Danaidæ.—The Danaids. Genera key.

1a (3). H v8 not parallel to v7 and meets costa about origin v7.

1 (2). H pcv from beyond origin v8; v6 nearer 5 and 5 nearer 4; dcu 5-4 perpendicular. No ♂ brand. Claws with appendages. Antennæ filiform. ♂ 4 abdominal hair pencils.

*Hestia*, Hub. The Tree-Nymphs. (Plate 10). (= *Nectaria*, M.).

2 (1). H pcv from origin v8; v6 nearer 7. With male brand. Claws with appendages. Antennæ more or less clubbed. ♂ 2 abdominal hair pencils.

*Danaïs*, Lat. The Tigers. (Plate 10). (= *Limnas*, Hub. : *Badacara Bahora*, *Caduga*, *Chittira*, *Parantica*, *Radena*, *Salatura*, *Tirumala*, M.).

3 (1a). H v8 parallel to v7 and far from costa, opposite origin v7; v6 nearer 7; v5 equidistant between 6 and 4; dcu 5-4 inclined. With ♂ brand. Antennæ clubbed. ♂ 2 abdominal hair pencils.

*Euploea*, F. The Crows. (Plates 10 and 11). (= *Crastia*, *Trepsichrois*, *Salpinx*, Hub.; *Calliplœa*, *Stictoplœa* But. : *Danisepa*, *Isamia*, *Karadira*, *Mahintha*, *Menama*, *Narmada*, *Pademma*, *Penou*, *Tiruna*, *Tronga*, M.).

## KEYS TO SPECIES

C1. *Hestia*.—The Tree-Nymphs. (Plate 10).

1 (2a). F costa prominently black at end v12; spots mid cell not zigzag. v10 from just before end cell. ♂ hair pencils of equal length.

## Lynceus Group.

α. Smoky. F discal spots beyond end cell separate; spot mid cell joined to spot above it.

\* *lynceus jasonia*, Wd. (120-140). The Ceylon Tree-Nymph. Ceylon. NR. (= *diabolica*, Fr.).

β. As α spot mid cell separate from spot above it.

*lynceus malabarica*, M. (120-160). The Malabar Tree-Nymph Travancore—Nilgiris. NR.

γ. As β but diaphanous white and smaller.

*lynceus kanarensis*, M. (120-140). The Kanara Tree-Nymph. N. Kanara. NR.

δ. Yellowish. F discal spots conjoined.

*lynceus arracana*, Fruh. (110-130). The Arracan Tree-Nymph. Sunderbans—N. Burma. R. (= *margherita*, Fr.).

η. As δ but apex F and margins F and H broad black unspotted.

*lynceus hadeni*, WM. and DeN. (120-140). The Bassein Tree Nymph. Bassein. R.

ξ. As δ but marginal spots H separate, not confluent.

C1. Hestia.—The Tree-Nymphs. (Plate 10)—*contd.*

*lynceus agarmarschana*, Fd. The Tavoy Tree-Nymph. Moulmein—S. Burma. NR.

ε. As ξ but smoky and black markings wider; H 3 equal black spots in 7.

*lynceus cadelli*, WM. and DeN. The Andaman Tree-Nymph. Andamans. NR.

θ Very similar to α.

*lynceus reinwardtii*, M. Mergui. VR.

2a (1). F costa not prominently black at the end of v12; spots in mid cell zigzag. Termens F and H evenly convex. ♂ 2 long and 2 short hair pencils.

Leuconœ Group.

2 (3). Uph detached marginal spots arranged as in No. 1.

*hypermnestra linteata*, But. (140-160). The Malayan Tree-Nymph. Mergui. VR.

3 (2). Uph black border bearing large white spots.

*leuconœ siamensis*, God. (120-160). The Siam Tree-Nymph. Victoria Point. VR.

## C2. Danais.—The Tigers. (Plate 10).

1a (8a). H v5 usually nearer 4; dcu 5-4 perpendicular. Black with pale blue to white markings. F pale area in cell unbroken transversely; in 2 there are 3 single spots followed by 2 marginal spots which are sometimes obsolete.

1b (4a). ♂ uph large pouch on v2 near margin and smaller one on v1. F cell pale with a dark streak.

Aglea Group.

1 (2a). Uph 2 detached or conjoined spots in the middle of 6.

α. Pale markings restricted. Upf and uph marginal spots obsolete at apex.

*aglea aglea*, Cr. (70-85). The Glassy Tiger. Ceylon. S. India. C. (= *grammica*, Bdv.: *ceylonica*, Fd.).

β. Pale markings more extensive and marginal spots complete.

*aglea melanoides*, M. Kashmir—Burma. C. (= *phormion*, Fr.).

γ. Pale marginal markings restricted, discal extensive; H basal spots in 2 and 3 conjoined to discal.

*aglea melanoleuca*, M. Andamans. C.

2a (1). Uph single spot mid 6.

2 (3). Above uniform. H cell with dark streak.

\* *agleoides*, Fd. (70-75). The Dark Glassy Tiger. Rangoon—S. Burma. Nicobars. NR.

3 (2). H basal half yellow; cell immaculate.

*aspasia*, F. (75-85). The Yellow Glassy Tiger. Burma. R. (= *crocea*, But.).

4a (1b). ♂ uph large pouch on v1 near margin and smaller one on v1a.

Tytia Group.

4b (6a). F cell immaculate.

4 (5). Uph margin broad dark chocolate, prominently white spotted.

## \*C2. Danais.—The Tigers. (Plate 10)—contd.

*melaneus plateniston*, Fruh. (85-95). The Chocolate Tiger. Sikkim—Burma. C. Straggler from Nicobars. (= *neopatra*, Fr.).

5 (4). Uph margin bright chestnut, obscurely spotted.

a. Pale markings extensive. F basal and discal spots in 2 and 3 conjoined.

*tytia sita*, Koll. (85-105). The Chestnut Tiger. Kashmir—Kumaon. NR.

β. Pale markings more restricted. F basal and discal spots in 2 and 3 well separated.

\* *tytia tytia*, Gray. Sikkim—Burma. NR. (= *tira*, Fr.).

6a (4b). F and H cell dark with a pale streak.

6 (7). H very sparsely marked, no pale streaks between cell and dorsum.

\* *fumata*, But. (85-95). The Ceylon Tiger. Ceylon. NR. (= *taprobana*, Fd.)

7 (6). H more marked, with long pale streaks between cell and dorsum.

*nilgiriensis*, M. (80-90). The Nilgiri Tiger. S. India. NR.

8a (1a). H v5 nearer 6 than 4 or equidistant; dev 5-4 inclined.

8 (9a). F vs 11 and 12 anastomosed. No ♂ brand except that v1 H is thickened and runs in a channel. Black with pale blue markings. F pale streak in cell divided transversely; in 2 there is a single basal and central spot, followed by 2 marginal spots.

Similis Group.

a. H prominent streak in cell. Markings wide; streaks beyond cell very wide.

*similis exprompta*, But. (75-85). The Blue Glassy Tiger. Ceylon. NR.

β. All markings narrower.

\* *similis vulgaris*, But. Bassein—S. Burma. C.

γ. H cell not streaked. Markings very wide.

*similis nicobarica*, WM. and DeN. South Nicobars. NR.

9a (8). F vs 11 and 12 free and parallel.

Limniace Group.

9b (12a). ♂ uph pendulous pouch in 1 shortly after origin v2. Black with pale blue markings; F pale streak in cell divided transversely; in 2 there is a large basal, 2 central and 2 marginal spots.

9c (11). F no pale streak from base cell along costal vein.

9 (10). F width of streaks beyond end cell not less than half their length.

*limniace mutina*, Fruh. (90-100). The Blue Tiger. Ceylon, India, Baluchistan, Burma. Car and Central Nicobars. VC. Straggler on Great Coco Island.

10 (9). F width of streaks beyond end cell much less than half their length.

a. Small with narrow markings.

*melissa musikanos*, Fruh. (85-95). The Dark Blue Tiger. Ceylon. NR.

β. Small, markings wide and pale.

\* *melissa dravidarum*, Fruh. S. India. NR.

C2. *Danais*.—The Tigers. (Plate 10)—*contd.*

γ. Large. F produced. Markings narrower and much darker. *melissa septentrionis*, But. (90-105). Kulu—Burma. C. Stragglers on Andamans and Nicobars.

11 (9c). F pale streak from base cell along costal vein.

a. This streak prominent, nearly as long as the streak along the median vein.

*gautama gautama*, M. (90-100). The Scarce Blue Tiger. Burma. R.

β. This streak very short. Smaller.

*gautama gautamoides*, Doh. (75-85). Nicobars. R.

12a (9b). ♂ uph with pouch below v2 shortly after its origin. Tawny.

Plexippus Group.

12b (15). Veins black.

12 (13a). H tawny.

*plexippus*, L. (75-95). The Common Tiger. Ceylon, India, Baluchistan, Burma, Andamans, Car and Central Nicobars. VC. (= *genutia*, Cr. : *nepalensis*, M. : *gryniion*, Fr.).

13a (12). H white.

13 (14). Uph narrow white discal streaks.

a. Pale markings extensive.

\* *melanippus indicus*, Fruh. (80-95). The White Tiger. Bengal, Burma, C. (= *hegesippus*, Auct.).

β: As *nesippus* but the tawny colour is much paler and the white discal and cell spots more prominent.

*melanippus camorta*, nov. Central Nicobars. NR.

γ. Pale markings reduced; H no white spot near base 6.

*melanippus nesippus*, Fd. S. Nicobars. C.

14 (13). Uph entire disc white, border inwardly tawny. Unh white costal streak at end of 8, dark border inwardly edged with tawny triangles.

*affinis malayana*, Fruh. (65-75). The Malay Tiger. Central Nicobars. NR.

15 (12b). Veins not black.

\* *chrysippus*, L. (70-80). The Plain Tiger. Ceylon, India, Baluchistan, Burma. VC. Andamans, Car and Central Nicobars. R.

v. *alcippoides*, M. Uph more or less white. VR.

v. *dorippus*, Cr. Upf white spotted black apex absent. R. (= *klugii*, But.).

C3. *Euplœa*.—The Crows. (Plates 10 and 11).

1a (13a). F dcu 5-6 sharply angled just above v5 and with a spur from the angle projecting into the cell.

1b (11a). ♂ upf one brand or none.

1c (3a). ♂ uph with an extensive dark area occupying the entire cell and spaces 4-6 packed with peculiar long thin scales ending in hairy edged clubs. Unh postdiscal series of markings double in 4, 5, 6.

Mulciber Group.

C3. Euplœa.—The Crows. (Plates 10 and 11)—*contd.*

1 (2). ♂ upf no brand: uph small yellow patch of modified scales in cell under origin v7 and a similar patch unf near base lb. Upf blue glossed.

a. ♀ unh no white streaks in cell. ♂ upf spots white.  
*mulciber kalinga*, Doh. (90-100). The Striped Blue Crow.  
 Madras—Bengal. R.

β. ♀ unh entirely white streaked. ♂ upf spots blue.  
 \* *mulciber mulciber*, Cr. Simla—Burma. C. (*linnaei*, M: *duarseri*, Rhé Phil). Straggler on Andamans.

2 (1). ♂ upf brand 10 mm long: no brand uph or unf. ♂ upf velvet black, spotless: ♀ dark-brown with a few white spots. Uph postdiscal spots elongated into long streaks. Unf no spot base 6.

a. Uph white streaks very long.  
*alcathæ doubledayi*, Fd. (85-100). The striped Black Crow.  
 Sikkim—S. Shan States. NR.

β. Uph white streaks short and in ♂ dusky.  
*alcathæ cesatia*, Fruh. Karens—S. Burma. NR.  
 3a (1c). ♂, as in all Euplœas, with disc uph and dorsum unf strewn with round ended scales, which may be assembled in recognisable areas, but never with the peculiar scales of the *Mulciber* group. Unh postdiscal markings in 4, 5, 6 usually single.  
 Core Group.

3b (5a). ♂ unf prominent pale yellow area of densely packed scales under a long brand in lb: uph similar scales contained in a shining dark-brown area about upper half of cell extending into 7 and bases 5-7.

3 (4). Above normally unmarked dark velvet brown, outwardly cinnamon. Below conspicuous discal spots, no postdiscal or submarginal.

a. ♂ upf brand showing in lb.  
*climena scherzeri*, Fd. (95-100). The Cinnamon Crow. Car Nicobar. C.

β. Similar but margins very much paler.  
*climena camorta*, M. Central Nicobars. C.

γ. ♂ upf no brand. Unf usually with apical spots, which may appear upf.

*climena simulatrix*, WM and DeN. S. Nicobars. C.  
 4 (3). Upf blue glossed for basal  $\frac{3}{4}$  and with very few spots, but always dots in 6, 7. Uph not blue glossed, with postdiscal and submarginal spots.

*modesta*, But. (80-95). The Plain Blue Crow. Dawnas—S. Burma. C. (= *cupreipennis*, *tavoyana* and *mouhoti*, M).

5a (3b). ♂ unf no pale yellow area, but dorsum may be denuded of scales, shining grey.

5b (10). ♂ upf brand absent or short.

5 (6a). Above blue glossed to basal  $\frac{2}{3}$ : F normally unmarked, H with conspicuous postdiscal and submarginal spots, postdiscal spot in 4 double and in ♀ a spot in cell and a discal series. ♂ no brand.

*camaralzaman*, But. (110-130). The Large Blue Crow.  
 Ataran—S. Burma. R. (= *carpenteri*, M).

## C3. Euplœa.—The Crows. (Plates 10 and 11)—contd.

6a (5). Above not or very obscurely blue glossed.

6 (7a). Upf postdiscal spot in 6 larger than any other spot above: always a discal spot in 3.

a. Upf postdiscal spots larger than submarginal. ♂ no brand.  
*crameri nicevillei*, M. (85-95). The Spotted Black Crow.  
Sunderbans. VR.

β. Upf postdiscal and submarginal spots equal: upf apical spots much enlarged. ♂ upf brand very rarely present.

*crameri bremeri*, Fd. Akyab—S. Burma. C. (= *olivacea*, M).

γ. Upf postdiscal and submarginal spots may be absent: upf apical spots smaller. Unh postdiscal spots normally present. ♂ upf brand present or absent.

*crameri esperi*, Fd. Car and Central Nicobars. C. (= *biseriata*, M).

δ. Unh postdiscal spots absent usually.

*crameri frauenfeldii*, Fd. South Nicobars. C.

7a (6). Upf spot in 6 smaller than the discal spots in 2 and 3 or than the postdiscal spots uph. ♂ upf with brand.

7b (9). Upf discal spots in cell and 2 absent.

7 (8). Upf apex plain, postdiscal spots present: uph postdiscal spots larger than submarginal. ♂ upf brand faint.

a. Upf submarginal spots nearly obsolete, postdiscal becoming obsolete apically; no spot base 3.

*core asela*, M. (85-95). The Common Indian Crow. Ceylon. C.

β. Upf submarginal and postdiscal spots prominent, latter more or less equal or decreasing slightly towards apex: no spot base 3.  
*core core*, Cr. India to Himalayas, C.

γ. Upf postdiscal spots increase in size apically.

*core vermiculata*, But. N. India—Assam. C.

δ. Upf basal  $\frac{2}{3}$  obscurely blue glossed, outer  $\frac{1}{3}$  paler: development of spots between *core* and *asela*: faint discal spots showing in 3 and on costa.

*core layardi*, Druce. Akyab—S. Burma. R. (= *binghami*, *subdita*, M).

8 (7). Upf apex violet (rarely plain), postdiscal spots obscure or absent, submarginal spots small, always a discal spot in 3. Upf postdiscal and submarginal spots nearly equal. ♂ upf brand prominent.

*godarti*, Lucas. (85-95). The Violet-tipped Crow. Manipur—S. Burma. C. (= *defigurata*, *dominans* and *recussa*, Fruh).

9 (7b). Upf prominent discal spots end cell and in 2 and 3. ♂ brand prominent.

a. Pale brown.

*andamanensis andamanensis*, Atk. (85-95). The Andaman Crow. S. Andamans. C.

β. Much darker. Upf discal spots smaller, postdiscal and submarginal spots larger.

*andamanensis bumila*, nov. Little Andaman and N. Sentinel Islands. C.

10 (5b). ♂ upf brand very long, 15 mm. Above blue glossed. Upf no submarginal or postdiscal spots, rarely white spot in cell, usually a spot base 3 and sometimes base 2.



**C3. Euploea.—The Crows. (Plates 10 and 11)—contd.**

*a.* Uph submarginal and postdiscal spots incomplete or absent.  
*deione deione*, Wd. (95-105). The long-branded Blue Crow.  
 Sikkim—S. Shan States. NR. (= *poeyi*, Fd: *magnifica*, But: *arida*, Fruh).

*β.* Uph submarginal and postdiscal spots complete and prominent.

*deione limborgii*, M. Karens—Mergui. NR.

*γ.* Upf blue much darker: uph postdiscal spots elongate.

*deione menetriesii*, Fd. Extreme S. Burma. R.

11a (1b). ♂ upf 2 prominent brands. Unf always a spot base 6, which is more prominent than the spots in 5 and 4, if latter are present.

Coreta Group.

11 (12). Upf blue glossed and blue spotted.

*a.* Upf postdiscal spots large, discal spots usually present. Uph postdiscal and submarginal spots usually incomplete.

*harrisi hopei*, Fd. (95-105). The Double-branded Blue Crow.  
 Sikkim—S. Shan States. NR. (= *binotata*, *microsticta*, But: *pymaea*, *regina*, M: *depunctata*, *discaelis* Fruh).

*β.* Upf postdiscal spots small, no discal spots: uph postdiscal and submarginal spots prominent.

*harrisi harrisi*, Fd. Karens—S. Burma. NR. Straggler on Andamans. (= *grotei*, Fd: *crowleyi*, M).

12 (11). Above not blue glossed.

*a.* Upf postdiscal spots reduced, becoming obsolete apically.

*coreta montana*, Fd. (85-95). The Double-branded Black Crow.  
 Ceylon. NR. (= *lankana*, M).

*β.* Upf postdiscal spots prominent.

*coreta coreta*, God. S. India. NR. (= *coreoides*, M).

13a (1a). F dcu with no spur into the cell. ♂ uph pale patch of round-ended scales at upper end of cell extended into 7 and bases 5 and 6: unf similar patch across basal part 1b.

Corus Group.

13b (15a). ♂ upf no brand.

13 (14). ♂ pale patches of modified scales pale brown. Uph small discal spots near bases 2, 3 and 4. Very large. Above not or only very obscurely blue glossed.

*a.* Upf apical spots no larger than the discal.

*corus corus*, F. (110-130). The Great Crow. Ceylon. NR.  
 (= *elisa*, But.).

*β.* Upf apex broadly suffused lilac.

*corus vitrina*, Fruh. Bassein. R.

*γ.* Upf apical spots much larger than the discal.

*corus phæbus*, But. Moulmein—S. Burma. Nicobars. R.  
 (= *castelnaui*, Fd.).

14 (13). ♂ pale patches of modified scales pale yellow. Uph plain pale brown: unh no discal spots. Uph blue glossed, with blue discal spots, coalesced in 6 and 7.

*mazares ledereri*, Fd. (70-80). The Dwarf Crow. S. Burma. R.

15a (13b). ♂ Upf with brand: patches of modified scales pale yellow.

15b (17a). ♂ Upf brand pale blue. Above blue glossed.

C3. Euplœa.—The Crows. (Plates 10 and 11)—*contd.*

15 (16). Upf very large white spot end cell, extending to costa and uph with white streaks below cell.

α. Upf white markings more extensive; in ♂ enters base 3.  
*diocletiana ramsayi*, M. (80-90). The Magpie Crow. Sikkim—Assam. NR.

β. Upf white markings restricted: ♂ not into base 3.  
*diocletiana diocletiana*, F. Assam—Burma. (= *rhadamanthus*, F: *despoliata*, Fruh).

16 (15). Above no white patches: upf with blue postdiscal spots: uph pale brown, usually only postdiscal spots in 4, 5, 6.

α. Smaller.

*leucostictos leucogonys*, But. (96-100). The Blue-branded King-crow. Moulmein—S. Burma. R. (= *lazulina*, M: *vestigata*, Mar. and DeN.).

β. Larger.

*leucostictos novaræ*, Fd. (106-119). Car and Central Nicobars. NR.

17a (15b). ♂ upf brand brown. Upf and uph of similar shade.

17b (20). ♂ upf brand short, 5 mm.

17 (18a). Above blue glossed.

α. Upf postdiscal and submarginal spots small and white: discal spots usually absent.

*klugii regalis*, M. (85-100). The Blue King-crow. Sikkim. NR.

β. Upf spots blueish and discal spots usually present. Very variable.

*klugii klugii*, M. Cachar, Sylhet, Assam—N. Burma. NR. (= *grantii*, *illustris*, But: *augusta*, *dharma*, *imperialis*, *indigofera*, *maclellandi*, *shervilli*, M: *hamiltoni*, Swin).

18a (17). Above not blue glossed, or only obscurely so near base occasionally in *crassa*.

18 (19). Above dark-brown. Upf no traces of discal spots end cell or in 2 and 3. Unh no spot in cell and at most traces of discal spots.

α. Upf sub-marginal spots obsolete, postdiscal small and regular.

*crassa sinhala*, M. (85-100). The Brown King-crow. Ceylon. R.

β. Upf submarginal spots present, postdiscal larger and regular.

*crassa kollari*, Fd. S. India—Bengal. R.

γ. Upf submarginal spots vanish towards tornus: postdiscal enlarged apically and coalescent: upper discal spots often present.  
*crassa crassa*, But. E. Bengal—S. Burma. NR. (= *erichsonii*, Fd: *apicalis*, *burmeisteri*, *masoni*, *pembertonii*, *uniformis*, M).

19 (18). Above pale-brown. Upf with complete discal spots and spot end cell. Unh spot end cell and discal series.

*roepstorffii*, M. (95-100). The Andaman King-Crow. S. Andamans. VR.

20 (17b). ♂ upf brand long, 10mm. Upf normally with blue discal spots and white postdiscal. Unh cell spot and discal series.

63. Euplœa.—The Crows. (Plates 10 and 11)—*contd.*

α. Upf blue gloss nearly to termen. Uph postdiscal and submarginal spots obsolete.

*midamus splendens*, But. (95-105). The Blue Spotted Crow. Sikkim—S. Shan States. R. (= *rogenhoferi*, Fd. : *irawada*, M.).

β. Upf basal  $\frac{2}{3}$  blue glossed. Uph postdiscal and submarginal spots more or less well developed.

*midamus brahma*, M. Karens—S. Burma. NR. Straggler on Central Nicobars. VR. (= *adamsoni*, Mar. : *margarita*, But. : *eclecta*, *noblei*, Swin.).

## D. SATYRIDÆ

## D. Satyridæ. The Satyrids. Genera Key.

1a (6a). Eyes hairy.

1 (2a). Palpi with appressed hairs. F no veins swollen; upper apex cell obtusely rounded; v10 from cell. H v3 from well before end cell.

*Mandarinia*, Leech. The Mandarin. (Plate 11).

2a (1). Palpi with porrect hairs. F v12 swollen.

2 (3a). F v1 and mv swollen; upper apex of cell highly acute and dcv angled.

*Mycalesis*, Hub. The Bushbrowns. (Plate 11). (= *Calysisme*, *Culapa*, *Gareris*, *Kabanda*, *Lcesa*, *Mydosama*, *Nissanga*, *Pachama*, *Sadarga*, *Samanta*, *Samundra*, *Suralaya*, *Telinga*, *Virapa*, M.: *Myrtilus*, DeN.: *Dasyomma*, Fd.).

3a (2). F v1 not swollen, mv more or less swollen.

3b (5). H vs 7 and 6 well separated at origin.

3 (4). H never symmetrical about a central axis from the base to the middle of the termen, nor is termen convex between vs 4 to 6; apex may be angled, costa straight, termen caudate at v4, tornus excavate before v2; very variable.

*Lethe*, Hub. The Treebrowns. (Plates 11-12). (*Zophoessa*, Db. and Hew.: *Debis*, Hew.: *Blanaida*, Kir.: *Charma*, Doh.: *Dionana*, *Enope*, *Hanipha*, *Kerrata*, *Nemetis*, *Neope*, *Patala*, *Putlia*, *Rangbia*, *Sinchula*, *Tansima*, M.).

4 (3). H symmetrical about a central axis, apex, termen and tornus evenly rounded.

*Pararge*, Hub. The Walls. (Plate 12). (= *Lasiommata*, Wd.: *Amecera*, *Rhaphicera*, But.: *Chonala*, M.).

5 (3b). H vs 7 and 6 close at origin. F upper apex cell highly acute and dcvs angled. H v3 from before v4.

*Orinoma*, Gray. The Tigerbrowns. (Plate 12).

6a (1a). Eyes smooth.

6b (25). H no prediscoidal cell.

6c (20a). F mv swollen.

6d (19). Palpi with porrect hairs. H v3 from before end cell.

6e (16a). F upper end cell not longer than lower end.

6f (15). H v8 highly angled at origin, meets scv more or less at right angles.

6 (7a). F v1, mv and v12 prominently swollen. F upper apex cell acute, antennæ club spatulate.

*Cænonympha*, Hub. The Heaths.

7a (6). F v1 not prominently swollen.

7b (9a). F mv prominently swollen; lower dcv convex.

7 (8). F upper apex cell acute.

*Maniola*, Schrank. The Meadowbrowns. (Plate 13). (= *Chortobius*, Guin.: *Epinephele*, Hub.).

8 (7). F upper apex cell right angled.

*Eumenis*, Hub. The Rockbrowns. (Plate 13). (= *Nytha*, Bill.: *Chazara*, *Philarcta*, M.: *Satyrus* Auct.).

## B. Satyridæ.—The Satyrids. Genera Key—contd.

9a (7b). F mv not swollen (except some *Ypthimas*, but they have the lower dcu F straight or concave).

9b (13a). H termen more or less crenulate and cilia, at least on F, prominently chequered.

9c (12). H upper dcu 5-6 concave at upper end. Unh no ocelli.

9 (10a). F cell short and broad; v4 curved, ♂ upf brand.

*Karanasa*, M. The Satyrs. (Plate 13). (= *Kanetisa*, M.).

10a (9). F cell longer than half the wing; v4 straight.

10 (11). Above tawny; no ♂ brand.

*Æneis*, Hub. The Mountain Satyrs (Plate 13). (= *Parcæneis*, M).

11 (10). Above black: upf ♂ brand.

*Aulocera*, But. The Banded Satyrs. (Plate 13).

12 (9c). H upper dcu 5-6 straight. Unh with ocelli.

*Arge*, Hub. The Marbled Whites. (Plate 13). (= *Agapetes*, Bill.: *Melanargia*, Meig.).

13a (9b). H termen not crenulate and cilia not chequered (except slightly in some *Erebias*).

13 (14). F lower dcu convex, v10 arises from cell (except in some palæarctic species).

*Erebia*, Dal. The Arguses. (Plate 13). (= *Callerebia*, But.: *Dallacha*, *Hemadara*, *Paralasa*, M.).

14 (13). F lower dcu straight or concave; v10 always from v7.

*Ypthima*, Hub. The Rings. (Plate 13). (= *Kolasa*, *Lohana*, *Nadiria*, *Pandima*, *Thymipa*, M.).

15 (6f). H v1 nearly straight at origin, meets scv at an acute angle. F upper apex cell right angled. No male brand.

*Zipetis*, Hew. The Cats-eyes. (Plate 13).

16a (6e). F upper end cell markedly longer than the lower end; upper apex cell highly acute.

16b (18). H normal. F v10 from cell.

16 (17). H vs 3 and 4 approximate at origin. F lower dcu highly concave.

*Orsotriæna*, Wallen. The Niggers. (Plate 13).

17 (16). H vs 3 and 4 well separated at origin. F lower dcu straight. No male brand.

*Erites*, Wd. The Cyclops. (Plate 13).

18 (16b). ♂ H abnormal, vs 7 and 6 forked long after origin v5, which arises shortly after origin v8; dcu represented by an ill-developed vein from origin v2 to scv before origin v5 and in ♂ this dcu is replaced by a narrow channel, not reaching the scv and covered by a recumbent tuft of black hairs. F v10 from v7.

*Ragadia*, Wd. The Striped Ringlets. (Plate 13).

19 (6d). Palpi with appressed hairs. F upper apex cell acute.

*Cærites*, Bdv. The Blue Cats Eyes. (Plate 14).

20a (6c). F no veins swollen.

20 (21a). Palpi with porrect hairs. F upper apex cell right angled. H v3 from end cell.

*Neorina*, Wd. The Owls. (Plate 14).

21a (20). Palpi with appressed hairs.

21 (22a). H v3 from just before end cell. F upper apex cell right angled, lower dcu straight; v10 from cell. No male brand.

**D. Satyridæ.—The Satyrids. Genera Key—contd.**

*Anadebis*, But. The Diadems. (Plate 14). (= *Ethope*, *Theope*, *M.* : *Euplaemina*, *Holl.*).

22a (21). H v3 from well before end cell. F upper apex cell rather acute, lower dcu concave.

22b (24). F v10 from cell.

22 (23). F v1 ends on termen; v5 nearer than usual to v6. No ♂ brand.

*Melanitis*, Fab. The Evening Browns. (Plate 14). (= *Hipio*, *Hub.* : *Cyllo*, *Bdv.*).

23 (22). F in ♂ v1 ends mid dorsum and v2 at tornus; ♀ normal.

*Cylogenes*, But. The Evening Browns. (Plate 14).

24 (22b). Venation very abnormal. F v12 runs to beyond origin v8, v11 runs into 12, vs 9 and 10 run through 12. H v5 from upper end cell, scv straight from origin, giving off 6 and 7.

*Parantirrhæa*, WM. The Travancore Evening Brown.

25 (6b). H with pre-discoidal cell at base 8, formed by a vein from scv to v8. Palpi with appressed hairs. F cell very short, upper apex acute, lower dcu concave. H v3 from end cell, lower dcu concave.

*Elymnias*, Hub. The Palmflies. (Plates 14-15). (= *Agrusia*, *Bruasa*, *Dyctis*, *Melynius*, *Mimadelias*, *M.*).

**KEY TO SPECIES****D1. Mandarinina.—The Mandarins. (Plate 11).**

Above dark brown with a blue discal band upf: below complete row submarginal ocelli. ♂ uph dark brand bases 5 and 6, entering cell and covered by a prominent tuft black hairs, springing from mid cell; polished area about mid v1 unf and dorsum F bowed.

\* *regalis*, *Leech*. (45-50). The Mandarin. N. Shan States. VR.

**D2. Mycalesis.—The Bushbrowns. (Plate 11).**

All the species have in the ♂ a more or less well developed brand on uph about origin v7 set in a nacreous area and covered by an erectile tuft of hairs; this is correlated to a similar brand along v1 unf also set in a nacreous area. Many species have additional brands, etc., which are referred to in the key. Seasonal variation is marked by obsolescence of ocelli below.

1a (8a). ♂ upf an elongated cavity along mid v1, covered by a hair pencil more or less well developed; some of the veins swollen or distorted.

Gotama Group.

1 (2a). Below no straight discal line across wings, some ill-defined pale brown and lilacine markings. Above ♂ dark velvet brown, apex F prominently paler and a blind ocellus in 2; ♀ with a broad red discal band from ocellus to costa. ♂ upf yellow tuft below v1; uph tuft white over small dark brand on large white area; unf small dark brand on a broad white area: H vs normal.



**D2. Mycalesis.—The Bushbrowns. (Plate 11)—contd.**

- maianeas*, Hew. (24-30). The Bandless Bushbrown. Mergui. VR.  
 2a (1). Below a well defined discal band.  
 2b (7). ♂ above not blue glossed.  
 2 (3a). Above unmarked. Below outwardly paler lilacine in WSF, lilacine and yellow in DSF. ♂ uph brand white, tuft pale yellow; unh no brand, upf brand and tuft black, prominent; H v7 origin pushed back to before mid cell.  
*adamsoni*, Wat. (45-50). Watson's Bushbrown. Manipur. N. Burma. R.  
 3a (2). Above not unmarked.  
 3b (5a). Upf pre-apical white band. Below as in No. 2.  
 3 (4). Up in ♂ no large black discal patch.  
 a. Up brand black, tuft pale yellow; remaining brands, etc., as in No. 2, except there is a small black brand unf.  
*anaxias anaxias*, Hew. (48-55). The Whitebar Bushbrown. S. India. NR.  
 β. Up brand pale yellow.  
*\*anaxias æmate*, Fruh. Sikkim.—Burma. NR. (= *miranda*, Evans).  
 γ. Upf prominent ocellus in 2.  
*anaxias radza*, M. Andamans. R.  
 δ. Upf pre-apical band wider, inner edge nearly to cell.  
*anaxias manii*, Doh. S. Nicobars. R.  
 4 (3). ♂ uph prominent black patch between bases 5 and 7; H costa very arched, v6 pushed back as well as 7 and its basal half swollen; remaining brands as before. Upf ocellus in 2 more or less apparent.  
*anaxioides*, Mar. and DeN. (52-62). The Large Whitebar Bushbrown. Karens—S. Burma. R.  
 5a (3b). Upf no preapical white band, but always a prominent pupilled ocellus in 2; unf never an ocellus in 3. ♂ unf brand small, brown; uph brand and tuft brown.  
 5 (6). H v3 from end cell. ♂ upf brand prominent.  
 a. Below discal line lilac. Upf usually an ocellus in 5. Up no ocelli.  
*\*francisca sanatana*, M. (48-55). The Lilacine Bush-brown. Kulu—Burma. NR. (= *gopa*, Fd.: *gomia*, Fr.).  
 β. Below discal line white. Upf prominent ocellus in 5. Up often ocelli in 2 and 3.  
*francisca albofasciata*, Tyt. Manipur, above 6,000 feet. R.  
 6 (5). H v3 from before end cell. ♂ upf brand obsolete and tuft obscure; H upper dev swollen. Above paler, ocellus in 2 very large and always one in 5, none uph. Below pale brown, inwardly darker in DSF; discal line white.  
*gotama charaka*, M. (45-50). The Chinese Bushbrown. Assam—Burma. R. (= *oculata*, M.: *peribæa*, But.)  
 7 (2b). ♂ above purple glossed, no pupilled ocelli; ♀ pale brown, all ocelli show through and are obscurely pupilled; below pale ochreous, discal lines dark brown. ♂ unf brand brown; uph brand long, brown, tuft dark brown: upf brand obsolete, tuft brown, obscure; H origin v7 pushed back; uph large black patch between bases 2-4; F dorsum bowed.

D2. Mycalesis.—The Bushbrowns. (Plate 11)—*contd.*

*orseis nautilus*, But. (48-52). The Purple Bushbrown. Nagas—Burma. VR.

8a (1a). Upf ♂ no brand and H veins normal.

8b (33). F origin v10 at or near end cell.

8c (22a, 32). H origin v3 at or just beyond end cell.

8 (9a). F dev 4-5 nearly straight. ♂ unf no brand; uph no brand, only a cavity, tuft white; H v6 swollen at base.

8A (8B). ♂ above dark brown, ocelli show through unpupilled; ♀ pale brown, all ocelli show through, with complete pupils and rings; below ochreous with 2 prominent fulvous bands.

\* *fuscum*, Fd. (40-50). The Malayan Bushbrown. Dawnas—S. Burma. R.

8B (8A). ♂ ♀ above tawny yellow with upf a broad dark border and small pupilled ocellus in 2: uph border very narrow, small pupilled ocelli in 1c to 3. Below bright ochreous with 2 prominent fulvous bands.

*anapita*, M. (40-50). The Tawny Bushbrown. Tenasserim. VR. (Sent me recently by Mr. O. C. Ollenbach).

9a (8). F. dev 4-5 concave and angled.

9b (20a). Uph normally only an ocellus in 2, very rarely one in 5. Uph never more than an ocellus in 2.

9c (19). H vs 6 and 7 well separated at base; lower dev at an angle to v3. ♂ only normal brands and tuft uph pale yellow.

Mineus Group.

9d (11a, 17-18). Unf small brand placed centrally under origin v2.

9 (10). ♂ uph brand black; unf black, very small. Uph ocellus not ringed; unh ocellus in 3 shifted out of line; unf WSF curved series ocelli in 2-5. F DSF termen straight or slightly concave.

a. Smaller. Upf usually unmarked in WSF.

*perseus typhlus*, Fruh. (38-50). The Common Bushbrown. Ceylon—Himalayas and Bengal. VC.

β. Upf always a pupilled ocellus in 2.

*perseus blasius*, F. (45-55). Kangra—Burma. VC. (*cephus*, *lurida*, But.: *samba*, M.).

10 (9). ♂ uph brand salmon pink or brown; unf brand small, brown. Upf ocellus situated in a more or less pale area, outwardly and inwardly defined by a narrow dark line; ocellus ring diffused into this area and never narrow, of uniform width or sharply defined.

a. WSF often very dark below and with small ocelli. DSF upf pale area often very extensive.

\* *mineus polydecta*, Cr. (40-48). The Dark-brand Bushbrown. Ceylon—Bengal. VC. (= *drusia*, M.).

β. Larger.

*mineus mineus*, L. (45-50). Kulu—Burma. C. (= *justina*, *otrea*, Cr.: *sub-fasciata*, M.: *carpenteri*, But.).

γ. Darker and ocelli below larger.

*mineus nicobarica*, M. All Nicobars. C.

11a (9d, 17-18). Unf brand extends from under origin v2 to at least under origin v3 and often much further.

11b (13a). Unf WSF brand to beyond outer edge of discal band; DSF to under origin v3 or 4, but, if not through discal band, the latter is bent outwards between v1 and 2 and sharply angled at v1.

•D2. Mycalesis.—The Bushbrowns. (Plate 11)—*contd.*

\*11 (12). Uph brand brown or pale yellow; unf DSF brand pale yellow or brown; WSF inwardly brown and outwardly pale yellow. Upf pale area as in No. 9; unf discal band always angled at vl in DSF and up to vl in WSF, being outwardly curved before reaching it.

*igilia*, *Fruh.* (40-48). The Small Long-brand Bushbrown. Coorg, Mysore. NR.

12 (11). Uph brand pale brown; unf pale brown to brown.

α. F. DSF apex sharp pointed and termen straight; WSF more rounded. WSF upf ocellus large, well defined.

*visala visala*, *M.* (45-55). The Long-brand Bushbrown. S. India, Pachmarhi. Kumaon—Assam. C. (= *indistans*, *M.*).

β. F apex more rounded.

*visala neovisala*, *Fruh.* Burma. R.

γ. F. apex rounded. Much darker.

*visala andamana*, *M.* Andamans. C.

13a (11b). Uph brand never through the discal band, though may be up to it; discal band not angled at vl.

13 (14a). Uph brand black. Upf WSF ocellus with rather broad and prominent yellow ring; unf discal band to costa; apex F very rounded. DSF always more or less ocellated and with a wavy postdiscal line always more or less apparent.

*perseoides*, *M.* (45-50). The Burmese Bushbrown. Katha—S. Burma. C. (= *intermedia*, *M.*).

14a (13). Uph brand pale yellow.

14 (15a). Above prominent pale sub-marginal line followed by 2 dark lines; inner half cilia pale, outer half dark. Upf ocellus with a narrow well defined, though often obscure, ring; unf always an ocellus in 1. Below WSF very black.

*subdita*, *M.* (43-50). The Tamil Bushbrown. Ceylon, Nilgiris, Madras, Orissa. NR.

15a (14). Above pale sub-marginal line obscure as usual.

15 (16). F apex very rounded; H termen very scalloped and almost caudate at v4; ♀ termen chequered. Below ♂ DSF always ocellated; ♀ very variegated.

*mercea*, *Evans.* (40-48). The Pachmarhi Bushbrown. Pachmarhi. NR.

16 (15). F apex more pointed and termen even.

α. Occurs in 3 forms, WSF intermediate and DSF.

*khasia orcha*, *Evans.* (42-55). The Pale-brand Bushbrown. Palnis, Coorg, Nilgiris. C.

β. Occurs in 2 forms only, WSF and DSF.

*khasia khasia*, *Evans.* Assam—Burma. C.

17 (9d. 11a. 18). Uph and unf brand silvery white, hard to see on the nacreous area. Above dark ferruginous, ocellus upf fulvous ringed and usually an ocellus in 5 and in 2 uph; below ochreous brown with broad yellow discal band.

*rama*, *M.* (48-58). The Cingalese Bushbrown. Ceylon. R.

18 (9d. 11a. 17). Unf no brand; uph brand dark brown, tuft reduced. Below pale brown, discal band pale yellow. Wings very rounded.

*evansii*, *Tyt.* (40-50). Tytler's Bushbrown. Assam, Manipur. R.

D2. *Mycalesis*.—The Bushbrowns. (Plate 11)—*contd.*

19 (9c). H vs 6 and 7 approximate at origin, lower dev in line with v3. Below DSF dull ochreous, always more or less ocellated. ♂ unf no brand; uph no brand in usual place, but tuft present, white; uph white brand below origin v6, covered by recumbent tuft black hairs rising beyond mid cell; H v1 swollen and covered by recumbent tuft black hairs.

*mystes*, DeN. (45-50). The Many-tufted Bushbrown. Manipur—Karens. R.

20a (9b). Uph normally 3 ocelli, may be 2 or 4. Above very dark ferruginous brown. ♂ uph brand black, tuft brown. F vs 5 and 6 well separated at origin.

20 (21). Upf large ocellus in 2 and all ocelli above prominently fulvous ringed, except ocellus in 5 upf. Unf no brand and tuft uph very inconspicuous.

*adolphe*, Guer. (50-55). The Red-eye Bush Brown. Coorg, Nilgiris. NR.

21 (20). Upf large ocellus in 2 on a wide fulvous area, ocellus in 5 minute or absent; uph ocelli fulvous ringed or on a fulvous area. H termen caudate at v4. Unf small black brand.

\* *oculus*, Mar. (45-60). The Red-disc Bush brown. Travancore, Palnis. C.

22a (8c. 32). H origin v3 before end cell.

Nicotia Group.

22b (28a. 31). Pupilled ocelli present in 2 and 5 upf, latter rarely absent, and in 2 uph.

22 (23a). Below dark discal line; apex F produced. Above ochreous brown, ocellus in 2 upf enormous, with broad yellow ring. Below pale. Unf no brand but prominent square white patch in nacreous area: uph brand golden brown, tuft bright yellow.

\* *mnasicles perna*, Fruh. (60-70). The Cyclops Bushbrown. Shan States. S. Burma. R.

23a (22). Below pale yellowish discal line.

23 (24a). Below ground colour uniform, not mottled. Above prominent ocelli in 2 and 5 upf and 2 uph. Unh brand small, pale yellow; uph brand pale yellow, tuft pale brown; uph long erect dense hairs along basal part v1.

a. Cilia white.

*suavolens suavolens*, WM and DeN. (60-70). Wood-Mason's Bushbrown. Sikkim, Bhutan. R.

β. Below ocelli smaller: in DSF outwardly paler.

*suavolens sebonga*, Tyt. Manipur—N. Chin Hills. R.

γ. Cilia brown. Below paler, white bands tinged brown.

*suavolens duguidi*, Tyt. S. Shan States. R.

24a (23). Below basal area mottled.

24 (25a). Cilia white. Above ocelli small; those in 2 F and H equal and that in 5 H minute or absent. Unf in addition to ocellus in 2 there are 2 apical ocelli; unh ocellus in 3 absent. Unf brand minute, black; uph brand small black, tuft brown.

a. Upf white discal band obscure.

*mestra vetus*, Fr. (60-70). The White-edged Bushbrown. Sikkim—Bhutan. R.

β. Upf white discal band prominent.

**B2. Mycalesis.—The Bushbrowns. (Plate 11)—contd.**

\* *mestra mestra*, Hew. Assam. R.

25a (24). Cilia pale brown. Above ocelli larger; those in 5 F and 2 H equal, that in 2 F much larger. Below ocelli complete and those on F in line.

25 (26a). Uph in addition to ocellus in 2 always one in 3, usually in 2 and more rarely in 1. Upf ocellus in 2 enormous. Unf no brand; uph brand black and tuft brown.

*heri*, M. (60-70). Moore's Bushbrown. Kumaon—Bhutan. R.

26a (25). Uph rarely more than the ocellus in 2; if so very small.

26 (27). Below outer area before discal line nearly black, mottling confined to base. Unf brand small, salmon; uph brand salmon, tuft yellow brown.

*malsara*, M. (40-50). The White-line Bushbrown. Sikkim—Assam. R.

27 (26). Below brown and mottled up to discal line. Upf ocellus in 2 much larger than rest. Brands and tuft black.

*nicotia* Db. and Hew. (55-60). The Bright-eye Bushbrown. Mussoorie—Karens. NR. (= *langii*, De.N.: *nudgara*, Fr.).

28a (22b. 31). Above ocelli blind. Below mottled; pale yellow or white discal line. Brands black and tuft brown.

28 (29a). Above white discal line clearly defined.

*malsara*, M. (40-50). The White-line Bushbrown. Sikkim—Rangoon. C. (= *rudis*, M.).

29a (28). Above white discal line not visible.

29 (30). Upf nearly always sub equal ocelli in 3 and 5 as well as the usual one in 2; rarely ocellus in 1. Uph always an ocellus in 2 and 3, even when the ocelli upf are reduced to one in 2. Cilia brown.

*a.* Wings rounded.

*mamerta mamerta*, Cr. (45-50). The Blind-eye Bushbrown. Assam—Shan States. NR. (= *watsoni*, Evans.).

*β.* Wings elongated. Termen H very scalloped.

*mamerta annamitica*, Fruh. Karens—S. Burma, R.

30 (29). Upf normally no ocellus in 3, if present smaller than ocellus in 5. Uph there may be ocelli in 2 and 3, but always absent, if ocellus in 5 upf is absent.

*a.* Cilia white, prominently chequered at ends veins.

*lepcha davisonii*, M. (45-50). The Lepcha Bushbrown. Palnis, Anamalais. NR.

*β.* Cilia brown. Below discal line wide, outwardly ill-defined.

*lepcha bethami*, M. Pachmarhi, Orissa. R.

*γ.* Cilia brown. Below discal line narrow, threadlike and obsolete towards costa unf.

*lepcha lepcha*, M. Kulu—Kumaon. NR.

*δ.* Cilia white, not chequered. Very dark above and below.

*lepcha kohimensis*, Tyt. Assam—Karens. NR.

31 (22b. 28a). Above unmarked, prominent double ante-terminal line. Below uniform, discal line lilacine; unh ocelli in 2 and 3 larger than rest. Wings very rounded. Unf brand absent or minute, dark; uph brand black, tuft brown, inconspicuous; H bases vs 2, 3 and 4 slightly swollen and covered with scattered erect hairs.

**D2. Mycalesis.—The Bushbrowns. (Plate 11)—contd.**

*malsarida*, But. (45-50). The Plain Bushbrown. Assam. R.  
(=*khasiana*, M.).

32 (8c, 22a). H origin v3 far beyond end cell. Unf no brand; uph brand black, tuft pale brown. Above dark brown, ocellus in 2 upf set obliquely at lower edge of pale area, minute ocellus in 5 usually present; these ocelli pupilled; uph no ocelli. Below not mottled.

**Patnia Group.**

a. Upf pale area fulvous and fulvous patch in cell. Below fulvous.

*patnia patnia*, M. (40-45). The Gladeye Bushbrown. Ceylon. C.

β. Upf pale area white. Below rather pale brown.

\* *patnia junonia*, But. S. India. NR.

33 (8b). F origin v10 well beyond end cell. ♂ unf small dark brand: uph brand pale yellow, tuft pale yellow; uph small dark brand above origin v6; H v1 distorted towards v2 resulting in a fold in the wing, over which there is a recumbent tuft of brown hairs. Above brick red; upf blind ocellus in 2; below very dark, not mottled.

**Oroatis Group.**

*oroatis surkha*, Mar. (50-55). The Red Bushbrown. Dawnas—S. Burma VR.

**D3. Lethe.—The Treebrowns. (Plates 11 & 12).**

1a (45a). H v8 about half length v7. Unh no ocellus in 7.

1b (17a). F upper apex cell evenly rounded, end v12 over end cell. Unh more than one band in the cell.

**Sura Group.**

1c (14a). H v3 from before end cell.

1d (10a). H tornus not excavate between vs 1b and 2: not more than slightly caudate at end v4.

1e (8a). Unh basal markings lilacine. No ♂ brand.

1f (5a). Unh ocelli in 2 and 6 always larger or more clearly defined than the others.

1g (3a). Unh ocelli in 4—tornus with centres in a straight line.

1(2). Uph dark spots outwardly white bordered. ♀ mostly white.

*visrava*, M. (50-55). The White-edged Woodbrown. Sikkim—Bhutan. R. (= *deliades*, Hew).

2 (1). Uph uniform.

\* *siderea*, Mar. (48-55). The Scarce Woodbrown. Garhwal—N. Burma. R.

3a (1g). Unh ocelli on an arc.

3 (4). Unf with apical dots or ocelli. WSF very dark and ocelli in 2 and 6 much enlarged. DSF bronzy, unh more variegated.

a. Uph black spots absent in WSF: prominent in DSF.

*sidonis vaivarta*, Doh (45-60). The Common Woodbrown. Kulu—Bhutan. NR. (DSF = *nicevillei*, Evans).

β. Uph black spots traceable in WSF, usually absent in DSF.



## B3. Lethe.—The Treebrowns. (Plates 11 and 12)—contd.

*sidonis sidonis*, Hew. Kumaon—S. Shan States. (DSF = *gelduba*, Fruh and *irma*, Evans). C.

4 (3). Unf no apical spots or ocelli.

*nicetella*, DeN. (45-50). The Small Woodbrown. Sikkim. R.

5a (1f). Unh ocelli equal.

5 (6a). Unh ocelli large and blurred, yellow rings absent.

*maitrya*, DeN. (45-55). The Barred Woodbrown. Kulu—Sikkim. NR.

6a (5). Unh ocelli small and clear. H angled or faintly caudate at v4.

6 (7). Unh discal silver line highly dislocated, in 2 drawn up to base and zigzagged in 1c. ♂ unf only traces of discal band: ♂ ♀ discal band at angle of 45° to costa. Unh area between discal band and ocelli yellow.

*violaceopicta kanjupkhula*, Tyt. (50-60). The Manipur Woodbrown. Manipur. R.

7 (6). Unh discal silver line more regular, crosses 2 at origin v3 and only waved in 1c: ♂ ♀ area beyond discal band yellow. Unf discal band at right angles to costa.

*nicetas*, Hew. (48-55). The Yellow Woodbrown. Kulu—Manipur. NR.

8a (1e). Unh no pale markings; ferruginous bands on a rather pale ochreous brown ground, basal markings in cell very obscure, but traceable. ♂ upf broken band from mid v1 to base v4.

8 (9). Unf pre-apical white spots from 3 or 4 to costa, appearing on upf in ♀.

*tristigmata*, El. (55-60). The Spotted Mystic. Sikkim. R.

9 (8). Unf pre-apical white spots, from 6 to costa.

*ocellata lyncus*, DeN. (55-60). The Dismal Mystic. Sikkim. Manipur. VR.

10a (1d). H sharply excavated at tornus beyond v2 and strongly caudate at v4. Unh with an inverted Y-shaped dark band from costa to lower end cell, beyond which is a straight broad white or yellow band. ♂ band upf usually obscure or obsolete.

10 (11-13). Unh area behind dark band end cell ferruginous, bearing a single narrow irregular line from costa through mid cell. ♂ upf prominent broad band.

*kabrua*, Tyt. (55-60). The Manipur Goldenfork. Manipur. R.

11 (10, 12, 13). Unh area behind dark line end cell dark brown, bearing 2 narrow irregular lines from costa across cell.

a. Unf 2 apical ocelli. Markings narrower and darker.

*jalaurida jalaurida*, DeN. (50-55). The Small Silverfork. Kulu—Kumaon. R.

β. Unf 1 apical ocellus. H more produced at tornus; discal line straighter at lower end.

\* *jalaurida elwesii*, M. (50-55). Sikkim. NR.

12 (10, 11, 13). Unh area behind dark band end cell brown, bearing a straight pale broad band from costa across cell and a very obscure basal band. Unf no apical ocelli.

*moelleri*, El. (50-55). Moeller's Silverfork. Sikkim. NR.

13 (10-12). Unh area on either side dark band end cell yellow, base ferruginous brown. Above with fulvous markings.

D3. Lethe.—The Treebrowns. (Plates 11 and 12)—*contd.*

*atkinsonia*, Hew. (48-55). The Small Goldenfork. Sikkim-Bhutan. R.

14a (1c). H origin v3 from end cell; caudate at v4 and excavate beyond v2. Unh an inverted Y-shaped dark band at end cell as in last group and a pale broad dark bar near base. ♂ upf broad band from mid v1 to base v4.

14 (15a). Unh dark discal band does not widen towards costa. Pale areas below yellow.

a. Unh outer edge dark discal band regular.

*goalpara narkanda*, Fruh. (65-75). The Large Goldenfork. Simla. R.

β. Unh outer edge dark discal band very irregular.

*goalpara goalpara*, M. (65-80). Sikkim—Assam. NR.

15a (14). Unh dark discal band widens towards costa. Unh pale areas lilacine, becoming more or less yellow in ♀

15 (16). Unh inner edge discal band straight between vs 6-4. ♂ upf uniform dark brown.

\* *sura*, Db. (65-85). The Lilacfork. Sikkim—N. Burma. C.

16 (15). Unh inner edge discal band angled between vs 6-4. ♂ upf outwardly paler; uph outwardly greyish and upper dark spots usually absent.

a. Pale outer area broad.

*dura gammiei*, M. (70-85). The Scarce Lilacfork. Sikkim—Bhutan. VR.

β. Darker. Pale outer area narrow. Uph spots very small.

*dura dura*, Mar. (70-85). Karen Hills—Dawnas. VR.

17a (1b). F upper apex of cell angled: end v12 well beyond end cell. Unh not more than bar in the cell.

#### Europa Group.

17b (40a). H v3 from about end cell.

17c (20a). H v2 twice as near to end cell as is v5. ♂ uph dark band in 7 from base v8 to origin v7, entering 6 and cell.

17 (18a). Unf pale bar end cell. Unh v1 pale and a pale basal marking from costa across cell.

a. Unf discal ocelli obsolete or obscure. Smaller and paler.

*baladeva aisa*, Fruh. (55-65). The Treble Silverstripe. Kumaon. R.

β. Unf discal ocelli prominent. Larger and darker.

*baladeva baladeva*, M. (67-70). Sikkim. R.

18a (17). These markings absent.

18 (19). Below dark brown. Unf discal ocelli and pale line beyond prominent.

\* *ramadeva*, DeN. (60-70.) The Single Silverstripe. Sikkim. VR.

19 (18). Below ochreous. Unf discal ocelli and pale line beyond obsolete or nearly so.

*andersoni*, Atk. (60-70). Anderson's Silverstripe. Bhamo. VR.

20a (17c). H v2 and 5 equidistant from end cell.

20 (21a). F dcu 4-5 highly concave. Unh ocelli incomplete, only a single apical and 2 tornal: unf single apical ocellus. Above fulvous. No ♂ brand.

*gemina gafuri*, Tyt. (60-70). Tytler's Treebrown. Nagas. VR.

21a (20). F dcu 4-5 more or less straight.

**♂3. Lethe.—The Treebrowns. (Plates 11 and 12)—contd.**

21b (26a). F cilia chequered, dark at end veins, whitish between. ♀ always with a white band. H caudate. Unh ocelli more or less disintegrated.

21c (25). ♂ upf no white band and no brand. ♀ unf ocellus in 3 conjoined to band.

21 (22a). Unh no discal band, all ocelli very large and much disintegrated. Unf single pale band across cell.

α. Uph black spots prominent. Below very dark.

*europa ragalva*, Fruh. (65-75). The Bamboo Treebrown. S. India. NR.

β. Below paler. Very similar.

\**europa niladana*, Fruh. (65-75). Dun—Burma. C.

γ. Larger, very dark. Unf ♀ white discal band straighter at costa.

*europa nudgara*, Fruh. (70-80). Andamans. NR.

δ. ♀ above band yellow.

*europa tamuna*, DeN. (70). South Nicobars. VR.

22a (21). Unh with discal band. Unf broad dark inner bar in cell continued into 1 and there is a narrow irregular outer one separated by a pale area.

22b (24). Unh ocelli in 3, 4 and sometimes 5 elongated and distorted.

22. (23). Unh apical ocellus conspicuously larger than ocellus in 2.

α. ♂ upf whitish outer spot in 2; ♀ white band in 3 well separated spots.

\**rohria nilgiriensis*, Guer. (58-65). The Common Treebrown. Ceylon. S. India-Pachmarhi. C.

β. ♂ upf no pale spot in 2 and ♀ with white band continuous.

*rohria dyrta*, Fd. Kashmir—Kumaon. C.

γ. As last, but larger and darker usually. Uph black spots larger. Unf discal band more irregular on inner edge and continued to vl in ♀.

*rohria rohria*, F. (60-70). Sikkim—Burma. C.

23 (22). Unh apical ocellus not larger than rest. ♂ upf no white spots.

α. ♀ upf band broad and irregular, spot in 3 shifted in, so that its outer edge is in line with spot in 2. ♂ uph small spots in 3, 4 and 5.

*drypetis drypetis*, Hew. (65-70). The Tamil Treebrown. Ceylon. NR. (= *embolina*, But.).

β. ♀ upf band narrow and regular, spot in 2 long and narrow, no spot in 1. ♂ uph spot in 5 large and prominent.

*drypetis todara* M. S. India—Orissa. NR.

24 (22b). Unh ocelli in 3-5 rounded, only slightly disintegrated.

*daretis*, Hew. (50-60). The Ceylon Treebrown. Ceylon. NR.

25 (21c). ♂ ♀ with white band upf. Unh ocelli rounded and hardly disintegrated. Unf single pale line in cell, continued to vl. ♂ uph a dark brand base 6, extending into cell, 7 and 5.

α. Smaller, paler, markings smaller. Unf usually only 2 apical ocelli.

*confusa confusa*, Aur. (50-55). The Banded Treebrown. Murree—Sikkim. C.

D3. *Lethe*.—The Treebrowns. (Plates 11 and 12)—*contd.*

$\beta$ . Unf nearly always 3 apical ocelli.  
*confusa gambara*, Fruh. (52-65). Assam—Burma. C. (= *apara*, Fruh.).

26a (21b). F cilia uniform.

26b (32a). Unh ocelli more or less disintegrated. H more or less caudate.  $\delta$  upf plain:  $\phi$  with white band (except *satyavati*).

26 (27a). Unh ternal ocellus single, ocelli in 3-5 slightly disintegrated.  $\delta$  below very dark, washed violet;  $\phi$  paler and outwardly yellowish.  $\phi$  upf white band with detached spot in 1; uph with pale yellow areas across the black spots.  $\delta$  upf long brand in outer part of 1, showing as a raised patch below and crossed by a recumbent tuft of black hairs.

*dynsate*, Hew. (55-60). The Ceylon Forester. Ceylon. VR. (= *sihala*, Hew.).

27a (26). Unh ternal ocellus not single pupilled.

27b (30a). Unh basal line straight.

27 (28a). Unh discal line highly wavy.  $\delta$  uph outwardly red:  $\phi$  bright brick red.  $\phi$  upf always white spot in 1 and very faint discal line. Unh basal dark line straight.  $\delta$  uph brand towards base 2 covered by tuft hairs; upf brand from dorsum to v3.

\* *minerva tritogeneia*, Fruh. (63-70). The Branded Red Forester. Chin Hills—S. Burma. NR.

28a (27). Unh discal line sinuous.

28 (29).  $\phi$  with a white band upf.  $\delta$  upf obscure brand dorsum to v4.  $\delta$  uph outer area more or less red.  $\phi$  rather dusky red, discal line prominent upf.

a.  $\delta$  uph outer area paler.  $\phi$  lighter. Below much paler.

*mekara mekara*, M. (65-75). The Common Red Forester. Sikkim. C.

$\beta$ . Darker especially in WSF.

*mekara zuchara*, Fruh. Assam—Burma. C. (= *vajra*, Fruh.).

29 (28).  $\phi$  upf unmarked; uph outer area pale brown with black spots. Unh basal area uniform pale brown, outer area about ocelli whitish; basal line straight, discal line as in No. 28.  $\delta$  unknown.

*satyavati*, DeN. (65-75). The Pallid Forester. Assam. VR.

30a (27b). Unh basal line irregular and more or less broken.

30 (31). Unh discal dark line much bent out in middle, in 2-4 separated from the ocelli by only the width of the latter.  $\delta$  uph red marginal area obscure or absent.  $\phi$  dusky red above.  $\delta$  upf brand as in No. 28.

a.  $\delta$  above outwardly paler.  $\phi$  paler both sides.

*chandica chandica*, M. (65-75). The Angled Red Forester. Sikkim. C. (= *namura*, Fruh.).

$\beta$ . Much darker.

\* *chandica flonona*, Fruh. Assam—Burma. NR.

31 (30). Unh discal dark line not so much bent out in middle, in 2-4 far from ocelli.  $\delta$  brand obsolete.  $\delta$  uph outer area bright red with prominent black spots;  $\phi$  mostly bright red. Below F margin and H ternal area yellow.

*distans*, But. (70-80). The Scarce Red Forester. Sikkim—Karens. VR.

32a (26b). Unh ocelli entire.

D3. Lethe.—The Treebrowns. (Plates 11 and 12)—*contd.*

32b (37a). F apex not produced and termen straight.

32c (34b). Unf no or very faint marking in cell. Upf ocelli and sub-marginal dark line apparent; uph complete series spots. Unh ocelli perfect; apical very large and shifted in. No male brand.

32 (33). ♂ above no band or white spots; ♀ very broad white band. H rounded, costa and termen highly convex.

*naga*, Doh. (70-80). The Naga Treebrown. Manipur, Nagas—S. Shan States. R.

33 (32). ♂ upf narrow yellow band; ♀ white band. Unh no discal band; single pale band through end cell.

*margaritæ*, El. (85-95). The Bhutan Treebrown. Bhutan. VR.

34b (32c). Unf always prominent mark in cell.

34c (36). Unf outer dark line in cell straight: inner line broad, single.

34 (35). ♂ unf discal line sinuous, directed to tornus. ♀ upf broad white discal band.

α. ♀ upf discal band of even width and curved down at tornus.

*insana insana*, Koll. (55-60). The Common Forester. Chamba—Kumaon. R.

β. Below washed metallic violet. ♀ upf band narrower and straighter.

\* *insana dinarbas*, Hew. Kumaon—Assam. NR.

35 (34). ♂ unf discal line straight and outwardly evenly and narrowly pale throughout, directed to dorsum. ♀ a very narrow whitish discal band unf, appearing as a narrow pale band above.

α. ♂ uph no tuft.

*brisanda brisanda*, DeN. (55-60). The Dark Forester. Bhutan—Assam. R.

β. ♂ uph thin tuft of upturned hairs along upper part of cell.

*brisanda sadona*, nov. (56). Sadon, Upper Burma. VR.

36 (34c). Unf outer dark mark in cell concave and well separated from inner mark, which is double. ♀ above no pale band, but dark band from below shows through and area beyond is paler, 2 pale apical dots. ♂ upf large triangular brand from mid dorsum to vs 4 and 5. Unh pupils of ocelli 3-5 dimmed but not disintegrated.

α. Unh basal band straight.

*serbonis serbonis*, Hew. (60-70). The Brown Forester. Sikkim. R.

β. Unh basal band broken in at v6.

*serbonis naganum*, Tyt. (70-75). Manipur, Nagas—Ruby Mines. NR.

37a (32b). F apex produced, termen straight. H strongly caudate. Below dark lines very straight. ♂ upf obscure or nearly obsolete brand from dorsum to 4 or 5.

37 (38a). Below area beyond discal line prominently paler and outer edge basal dark line prominently edged whitish. Upf discal line showing (whitish in ♀) and beyond paler. Upf black spots prominent and ringed fulvous.

*vindhya*, Fd. (65-70). The Black Forester. Sikkim—Burma. NR. (= *dolopes*, Hew.; *alberta*, But.; *ladesta*, Fruh.).

38a (37). Below uniform. Upf with small pale spots in 3, 4 and 6 and in ♀ spots beyond cell; discal line from below faintly showing in ♂, prominent in ♀.



D3. *Lethe*.—*The Treebrowns*. (Plates 11 and 12)—*contd.*

38 (39). Uph spot in 4 and unh ocellus in 4 on even curve with rest. Uph spots yellow ringed.

\* *kansa*, M. (65-75). The Bamboo Forester. Kumaon—Burma. C. (= *vaga*, *zeugitana*, Fruh.).

39 (38). Uph spot in 4 absent and unh ocellus in 4 out of line with rest, nearer margin. Uph ocelli placed on a red area in ♂ and on an orange area in ♀, where basal area F and H is dark dusky red, apical and terminal area F dark brown.

\* *sinorix*, Hew. (70-78). The Tailed Red Forester. Sikkim—Dawnas. R.

40a (17b). H v3 from before end cell. Unh ocelli perfect.

40b (44). ♂ uph prominent brand along basal half of v3 covered by a recumbent tuft of black hairs. Unf discal band ends on dorsum well before tornus.

40 (41a). Unf area between dark bars in cell pale, inner bar broad. ♂ above outwardly blue shading to purple. ♀ dark brown; unf narrow yellow band just showing above. ♂ upf dark brand about middle v1.

\* *scanda*, M. (58-65). The Blue Forester. Sikkim—Assam. R. (= *dirphia*, Druce: *nada*, M.).

41a (40). Unf area between dark bars in cell not pale, bars of equal width.

41 (42a). Unf discal dark line crosses v2 much nearer its end than its origin; unh basal band straight. ♂ upf unmarked; ♀ unf narrow white band, which shows above as a prominent pale brown band, as well as 2 yellowish apical dots. ♂ upf brands along each vein from 1-6 decreasing in width.

*latiaris*, Hew. (55-65). The Pale Forester. Sikkim—Karens. R. (= *perimele*, Fruh.).

42a (41). Unf discal dark line crosses v2 beyond its middle.

42 (43). Unh basal dark line very irregular, broken at mv and v7. ♂ upf unmarked; ♀ with 3 yellow outer spots in 3, 4 and 7 and discal in 2 and 3. ♂ uph brand in basal  $\frac{1}{2}$  of 5 and 6; upf brand along middle of v1 and dorsum bowed.

a. Unf cell bars posteriorly convergent.

*gulnihal gulnihal*, DeN. (58-64). The Dull Forester. Bhutan—N. Burma. VR. (= *issa*, Fruh.).

β. Unf cell bars parallel. Much darker and ♂ below more ochreous. ♀ spots above more obscure.

*gulnihal peguana*, M. Karen Hills—Dawnas. R.

43 (42). Unh basal dark line regular. ♂ upf marked as ♀ of last, discal spots often absent. ♀ with a row of small discal white spots from 1-6 and uph spots ringed dark orange. ♂ uph brand in basal  $\frac{1}{2}$  of 4-6; upf brand along v1, dorsum not bowed.

*bhairava*, M. (65-75). Sikkim—Assam—Dawnas. NR.

44 (40b). ♂ ♀ with broad white even band ending above v1 on termen, no white apical spots or ocelli. Unh ocelli practically perfect. Unf single obscure pale bar in cell. H faintly caudate. ♂ uph dark brand base 6, extending into cell, 7 and 5.

a. Upf band narrow. Uph only an ocellus in 2.

*verma verma*, Koll. (55-60). The Straight-banded Treebrown. Kashmir—Kumaon. C.



D3. *Lethe*.—The Treebrowns. (Plates 11 and 12)—*contd.*

β. Band wider. WSF larger. Uph always an ocellus in 2 and 3.

*verma sintica*, *Fruh.* Sikkim—N. Burma. C.

γ. Smaller and band narrow, rather yellowish. Unh ocelli small.

\* *verma stenopa*, *Fruh.* (50-55). Shan States—S. Burma. C.

45a (1a). H v8 nearly as long as v7. Unh with an ocellus in 7. Cilia chequered. ♂ brand upf mid dorsum to 4, often obscure. Bhadra Group.

45b (49a). Upf and unf a number of large yellow or whitish spots, always 2 spots in 3.

45c (47a). Always 2 pale spots in 2 upf; v1, mv and bases vs 2 and 3 yellow.

45 (46). Upf spot beyond cell in 5 rarely present and, if so, in line with spot in 4, not well behind it. Unf costal bar beyond cell oblique.

α. Smaller, darker and markings smaller. Upf pale bar before end cell not continued across at full width.

\* *pulaha pulaha*, *M.* (60-70). The Veined Labyrinth. Chamba—Sikkim. NR.

β. Larger and paler. Upf pale bar before end cell continued across cell at full width.

\* *pulaha pulahoides*, *M.* Assam—Karens. R.

46 (45). Upf beyond cell a spot in 5 in continuation of the 2 costal spots and unf pale costal bar continued to v4 at right angles to the costa; pale markings in inner two-thirds of cell nearly obsolete. Unh darker, basal markings very obscure, ocelli larger. Above darker and spots deeper yellow. F apex less produced. H costa and v8 straight, not convex.

*pulahina*, *Evans.* (60-70). The Scarce Labyrinth. Sikkim—Manipur. R.

47a (45c). Upf and unf only one pale spot in 2; no veins yellow.

47 (48). Unh no ocellus in 1a. Upf pale bars in cell obscure. Unf central pale bar in cell highly angled and behind it a similar angled bar. DSF uph outwardly yellow; WSF brown except for yellow ocelli rings.

*armandii khasiana*, *M.* (75-85). The Chinese Labyrinth. Assam. N. Burma.

48 (47). Unh with an ocellus in 1a. Upf 2 pale bars in cell prominent. Unf central pale bar in cell oblique but straight, behind it only a pale detached bar against upper edge cell.

\* *bhadra*, *M.* (80-100). The Tailed Labyrinth. Sikkim—Karens. NR.

49a (45b). Upf no pale spots or markings, except ocelli rings.

49 (50). Below discal band prominently pale edged; ocelli F large and prominently pupilled, discal band outwardly curved at lower end. ♀ with black spots F very prominent and edged dull yellow outwardly.

\* *muirheadi bhima*, *Mar.* (70-80). The Black-spotted Labyrinth. N. Burma—Ataran. R.

50 (49). Below discal band very obscurely white edged. Ocelli F small and rather obscure, ocellus in 2 not larger than rest,

D3. *Lethe*.—The Treebrowns. (Plates 11 and 12)—*contd.*

discal band straight. ♀ rather as last, but black spots not so prominent.

α. Smaller and much paler.

*yama yama*, M. (70-85). The Dusky Labyrinth. Kulu—Sikkim, R.

β. Larger, darker, and markings below much richer.

\* *yama yamoides*, M. (75-95). Assam—Dawnas. R.

D4. *Pararge*.—The Walls. (Plate 12).

1a (4a). Upf prominent pupilled ocellus. F upper apex cell highly acute; mv much swollen. H v3 from after end cell. Above dark brown, usually with a fulvous area upf. Antennæ club spatulate.

1 (2a). Unh discal line not broken in at v4. ♂ upf broad black band from mid dorsum to base v4.

α. ♂ upf normally uniform dark brown.

*menava menava*, M. (50-60). The Dark Wall. Baluchistan—Chitral—Kashmir. NR.

β. ♂ upf normally with a fulvous area round the ocellus.

*menava maeroides*, Fd. Ladak. NR.

2a (1). Unh discal line broken in at v4.

2 (3). Unh discal line evenly curved from costa to v5. ♂ upf narrow black band as in last.

\* *schakra*, Koll. (55-60). The Common Wall. Zhob. Kurram. Chitral—Kumaon. C.

3 (2). Unh discal line broken in between vs 6 and 7. No ♂ band.

*mærcula* Fd. (55-60). The Scarce Wall. Chitral—Kumaon. R. (= *laurion*, DeN.).

4a (1a). Upf no pupilled ocelli. No ♂ band. F upper apex cell right angled. H v3 from end cell. Antennæ club gradual.

4b (6a). Above veins concolorous with ground. Unf single pre-apical ocellus in 5.

4 (5). Above yellow; unf 2 dark lines in cell. F mv much swollen.

\* *eversmanni cashmirensis*, M. (55-60). The Yellow Wall. Chitral—Kashmir R.

5 (4). Above dark brown with broad white band F and 2 apical dots; costa H white. Unf cell unmarked. F mv hardly swollen.

\* *masoni*, El. (60-65). The Chumbi Wall. Sikkim—Bhutan. NR.

6a (4b.) Above veins black. Unf pupilled ocelli in 2 and 5 and 2 transverse bars in cell. Above tawny with black marking. F mv not swollen.

6 (7). Unh 2 dark lines in cell.

*moorei*, But. (55-60). The Small Tawny Wall. Simla—Sikkim. NR.

7 (6). Unh no dark lines in cell.

\* *satricus*, Db. (60-65). The Large Tawny Wall. Sikkim—Assam. NR.

**D5. Orinoma.—The Tigerbrown. (Plate 12).**

Above white with very broad dark brown veins and white spotted border. Upf basal half cell orange with 2 black spots.

\* *damaris*, Gray. (75-80). The Tigerbrown. Kangra—Karens. NR. (= *harmostus*, Fr.).

**D6. Cænonympha.—The Heaths.**

Above and below very dark brown with a single pupilled ocellus upf. Very like a small *Erbia*.

\* *myops macmahoni*, Swin. (35-40). The Baluchi Heath. Baluchistan. NR.

**D7. Maniola.—The Meadowbrowns. (Plate 13).**

Upf the ocelli not pupilled or only rarely so in individuals.

1a (5a). H termen even, no ♂ brand, except in No. 3.

1b (4). Unh no prominent pale markings. Upf single apical ocellus; in ♀ rarely an ocellus in 2; ocelli not yellow ringed.

1 (2a). Upf bright tawny except for extreme base and margin. Unf discal line obsolete or nearly so, never shows above.

\* *pulchella*, Fd. (38-45). The Tawny Meadowbrown. Chitral—Kashmir. Lahoul. NR.

2a (1). Upf tawny area completely overlaid dark brown scales, less so in ♀. Unf discal line more or less prominent, especially in ♀, where it shows upf and beyond it there is a tawny area nearly clear of dark scales.

2 (3). Comparatively large, no ♂ brand.

a. Small form, ♀ bright coloured.

*pulchra chitralica*, Tyt. (41-44). The Dusky Meadowbrown. Kurram, Chitral. Gilgit to 9,000 ft. NR.

β. Very small and pale.

*pulchra baroghila*, Tyt. Chitral. Yasin & NW. Gilgit, over 9,000 ft. NR.

γ. ♀ upf entirely yellow, ocellus with pale yellow iris.

*pulchra astorica*, Tyt. Astor. Ladak. NR.

δ. Largest form.

*pulchra neoza*, Lang. Kashmir. NR.

η. ♂ upf with very dense brown scales.

*pulchra pulchra*, Fd. Lahoul—Kumaon, inner ranges. NR.

3 (2). Small. ♂ brand upf under mv.

*hilaris*, Stg. (34-36). The Pamir Meadowbrown. N. Chitral. VR.

4 (1b). Unh with prominent fulvous markings from base 8 to mid cell and a discal series of irregular fulvous or pale yellow spots. ♂ upf ocellus very obscure; ♀ apical ocellus in 2 prominent and yellow ringed.

\* *cænonympha*, Fd. (35-45). The Spotted Meadowbrown. Kashmir. NR. (= *goolmurga*, *maiza*, Lang.).

5a (1a). H margin crenulate. ♂ upf broad dark brand from v1 to v3 or 4. ♀ usually ocellus in 2.

D7. *Maniola*.—The Meadowbrowns. (Plate 13)—*contd.*

5b (7a). Unh no prominent ocelli, at most a very small one in 1.

5 (6). Above dark brown, only tawny beyond cell and about ocelli in female.

a. ♂ upf ocelli not yellow ringed. ♀ uph discal line prominent and much paler beyond it.

*lupinus centralis*, Riley. (45-50). The branded Meadowbrown. Baluchistan. NR. (= *interposita*, Auct.).

β. ♂ upf ocellus prominently yellow ringed. ♀ uph uniform. *lupinus chitralica*, Tyt. Chitral. NR.

γ. As last but ♂ upf ring to ocellus less prominent.

\* *lupinus kashmirica*, M. S. Chitral—Kashmir. NR.

δ. Larger and fulvous ring round ocellus in ♂ and fulvous areas about ocelli in ♀ upf larger.

*lupinus cheena*, M. (50-60). Kunawur—Nepal, inner ranges. NR. (= *monoculus*, Fr.).

6 (5). Above tawny except for extreme base and border. Unf discal line obsolete. Unh paler and more striated, very irregular discal and sub-marginal line.

*narica*, Hub. (48-50). The Tawny Branded Meadowbrown. Baluchistan. R.

7a (5b). Unh prominent white ringed ocelli and prominent white edged discal line.

7 (8a). Uph apical ocellus elongate.

*wagneri mandane*, Koll. (50-52). The Ovalspot Meadowbrown. Baluchistan. VR.

8a (7). Upf apical ocellus circular.

8 (9). Uncus of genitalia long and thin.

a. Large. ♂ upf brand wide and extending into 3. Unh ocelli small, ocelli in 1 and 5 very small or absent.

\* *davendra latistigma*, M. (52-55). The White-ringed Meadowbrown. Baluchistan. C.

β. Small. ♂ brand narrower and not into 3. Unh ocelli variable, often an extra ocellus in 6. Unf discal line prominent.

*davendra chitralica*, Evans. (48-52). Khyber. Chitral NR.

γ. As last. Unh ocelli 2 and 5 large and equal; ocellus in 1 usually absent.

*davendra brevistigma*, M. Baltistan—Ladak. NR.

δ. Large and brand broad, but not into 3. Unusually an ocellus in 1. Unf discal line obscure.

*davendra davendra*, M. (50-55). Spiti—Kumaon. R. (= *roxane*, Fd.).

9 (8). Uncus of genitalia short and stout: androconia in ♂ brand narrower.

a. Smaller than *latistigma*. ♂ brand very much narrower. Unh much darker and ocelli smaller.

*tenuistigma tenuistigma*, M. (45-48). The Lesser Whitering Meadowbrown. Baluchistan over 7,000 ft. R.

β. Larger with larger ocelli upf and unh. Differs from *chitralica* in having the brand longer, narrower and appressed to the mv: ♂ F more prolonged at apex.

*tenuistigma laspura*, nov. (48-50). Chitral over 9,000 ft. R.

# ♂8. Eumenis.—The Rockbrowns. (Plate 13).

1 (2a). Above velvet black with white border, no discal band. Unh white edged discal line and prominent ocelli in 2 and 5. ♂ upf brand from v1-4.

a. Upf white marginal band unsullied. Uph ocellus in 2 small and mostly on the white area. Below paler, discal line straight.

*parisatis shiva*, LeCerf. (65-70). The White-edged Rockbrown. Baluchistan—Chitral and Hunza. NR.

♂. Upf white margin narrow, sullied. Uph ocellus in 2 mostly on the dark area and large. Unh ocelli very large.

\* *parisatis parsis*, LeCerf. Kashmir—Kumaon. NR.

2a (1). Above with tawny or white band.

2b (4a). Unf broad dark bar in cell. Upf discal band consists of disconnected broad streaks, those in 2 and 5 being divided by an ocellus. Upf no ocellus in 1.

2 (3). Upf basal half of cell white; discal band white and always a streak in 4. Unf ocellus pupilled. ♂ upf broad brand.

*heydenreichi shandura*, Mar. (50-65). The Shandur Rockbrown. Chitral—Kashmir. R.

3 (2). Upf cell dark brown. Unf ocelli blind. ♂ upf brand narrow. DSF in Chitral (aberration in Baluchistan) has the band upf tawny. WSF in Chitral (only brood in Baluchistan) has the band upf white.

\* *persephone enervata*, Stg. (60-70). The Dark Rockbrown. Baluchistan. Chitral. NR. (DSF=*analoga*, Alph.; *ochracea*, Rühl).

4a (2b). Unf dark bar in cell narrow or absent, apical ocellus pupilled. Upf tawny band prominent and continuous, veins more or less dark. Uph ocellus in 2 small or absent.

4 (5). Unf apical ocellus with distinct iris. ♂ upf dark basal area not projecting so prominently into the discal band at v4. ♂ upf obscure broad brand under mv from v1-v4.

a. WSF band dark; on upf decreasing to dorsum, lower ocellus always present and usually 2 white dots between the ocelli: unf discal line clear, submarginal line zigzag. DSF band very pale, on upf of even width, lower ocellus rarely present and white dots absent: unf discal line clear, submarginal line sinuous.

*mniszechii halucha*, nov. (58-65). The Tawny Rockbrown. Baluchistan. NR. (DSF *pallida*, nov.).

♂. Upf band of even width, very broad, lower ocellus present and often 2 white dots. Uph tawny band to dorsum. Unf discal line faint, submarginal line sinuous.

*mniszechii droshica*, Tyt. Chitral, Gilgit, Baltistan to 9,000 feet. NR.

γ. Upf band narrower, with zigzag edges and veins broader black: lower ocellus often absent in ♂ and no white dots. Unf submarginal line zigzag, discal line clear.

*mniszechii gilgitica*, Tyt. Chitral, Gilgit, Baltistan over 9,000 ft. NR.

δ. Upf basal area paler rendering brand more prominent; band pale and wide, inner edge straight, turning obliquely inwards in 4-5; lower ocellus present, no white dots. Unf discal line clear, submarginal sinuous.

D8. Eumenis.—The Rockbrowns. (Plate 13)—*contd.*

*mniszechii lehana*, M. Ladak. NR.

η. Smaller, darker, bands narrower, very variable. Upf band decreasing to tornus, lower ocellus present and sometimes 2 black (unf white) dots between the ocelli. Uph always one and often 2 tornal ocelli. Unf discal line clear, submarginal sinuous or zigzag.

*mniszechii baldiwa*, M. (50-55). Shipki, Kunawur—W. Thibet. NR.

5 (4). Unf apical ocellus without iris. ♂ upf dark basal area projecting into the discal band at v4. ♂ upf prominent black band mid cell parallel to the scv.

\**thelephassa*, Hub. (55-65). The Baluchi Rockbrown. Baluchistan. C. Khyber R.

(Note. *semele diffusa*. But. was described in error from the Ravi basin.)

## D9. Karanasa.—The Satyrs. (Plate 13).

1a (3a). Upf single ocellus in 5.

1 (2). Upf broad tawny discal band; ocellus not pupilled.

a. Apex F produced. Upf discal band broad and light, veins only narrowly black.

*digna pallas*, Evans. (55). The Chitrali Satyr. Chitral to 9,000 feet. NR.

β. Apex F not produced. Upf discal band narrower, duller, veins broadly black, especially v4; outer edge discal band much zigzagged. Smaller.

*digna digna*, Mar. (52). Chitral over 9,000 feet. NR.

2 (1). Upf no tawny discal band; ocellus pupilled.

a. Upf ocellus small. Unh white bands prominent.

*actæa nana*, Stg. (50-55). The Black Satyr. Baluchistan. NR.

β. Much larger. Apex F produced. Upf ocellus very large.

\**actæa magna*, Evans. (60-65). Chitral to 9,000 feet. R.

γ. Small. Apex F rounded. Upf ocellus prominent. Unf discal line obscure.

*actæa pimpla*, Fd. (45-50). Chitral over 9,000 feet. Baltistan, Ladak. R.

3a (1a). Upf ocelli in 5 and 2 on a pale band (ocellus in 2 rarely absent).

3 (4a). Upf veins crossing tawny area concolorous. Tips of tegumen hooks rounded.

a. Upf tawny band turns yellow about apical ocellus: both ocelli pupilled.

*hubneri safeda*, Tyt. (42-50). The Tawny Satyr. Safed Koh, Kurram. NR.

β. Upf more uniform: lower ocellus often unpupilled.

*hubneri pupilata*, Tyt. Chitral over 10,000 ft. NR.

γ. Upf ocelli rarely pupilled and lower ocellus tends to be obsolete.

*hubneri hubneri*, Fd. Astor—Lahoul. NR. (A variable insect split by Tytler into the following further races: *astorica*, Tyt.



D9. Karanasa.—The Satyrs. (Plate 13)—*contd.*

Astor : *balti*, Tyt. = *leechi*, M, Baltistan : *pallida*, Tyt, Chongking Valley, Ladak : *modesta*, M. = *caesia*, M. Deosai plains : *hubneri*, Fd. Lahoul).

4a (3). Upf veins crossing tawny area darkened.

4 (5). Unf discal line obscure, lower ocellus prominent and pupilled. Unh basal line obscure. Tips of tegumen hooks obliquely truncate.

α. Tawny colour uniform.

*moorei moorei*, Evans. (50-57). The Shandur Satyr. Shandur Pass, Utzun & Tarben Nallahs, Chitral. NR.

β. Tawny colour paler and patchy.

*moorei gilgitica*, Tyt. Yasin and Ghizar, Gilgit. NR.

5 (4). Unf discal line prominent : lower ocellus unpupilled and may be absent. Unh basal line prominent. Tips of tegumen hooks pointed.

α. Comparatively large.

*boloricus chitralica*, Tyt. (44-50). The Turkestan Satyr. Chitral over 10,000 feet. NR.

β. Smaller.

*boloricus boloricus*, GG. (38-45). Misgar, Hunza. NR.

(Note. *regeli*, Alph, from Turkestan, is an allied species having the tips of the tegumen hooks turned outwards : it may occur in the NW borderland.)

D10. *Gneis*.—The Mountain Satyrs. (Plate 13).

1 (2a). Above pale yellowish brown with broad dark margins : upf with black discal spots in 2, 3, 5. Unh pale with broad central and marginal dark bands.

*buddha garhwalica*, Tyt. (48-53). The Thibetan Satyr. Shiruans, Garhwal, 13,500 ft. R.

2a (1). Above brown with a tawny discal band. Unh dark with a pale discal band.

2 (3). Upf tawny band ill-defined, diffused inwards, mostly tawny except for the dark border.

α. Above dark brown border narrow, confined to termen and ill-defined inwardly.

*pumilus pumilus*, Fd. (38-40). The Mountain Satyr. Kashmir, Ladak. NR.

β. Above dark brown border broad, up to edge of discal band.

\* *pumilus bicolor*, Seitz. (40-45). Chumbi Valley. NR.

3 (2). Upf tawny discal band narrow and well defined. Most of wing dark brown.

*palæarcticus sikkimensis*, Stg. (40-45). The Arctic Satyr. Sikkim. R.

D11. *Aulocera*.—The Banded Satyrs. (Plate 13).

Above black or very dark brown, discal band white or pale yellow. ♂ upf dark band mid dorsum to v4 more or less prominent.

D11. Aulocera.—The Banded Satyrs. (Plate 13)—*contd.*

1a (4). Below dark, white striation less prominent than the dark ground. Tegumen with horns.

1 (2a). Upf inner edge white discal spots 1-4 in line. Uph band narrow and even. Wings rounded, termens convex. Tegumen gradually sloped to tip.

a. Unf apical ocellus well defined and prominently pupilled. Uph discal band to dorsum.

*brahminus brahminus*, Blanch. (55-65). The Narrow Banded Satyr. Kashmir—Mussoorie. NC. (= *scylla*, But.: *werang*, Lang.).

β. Unf apical ocellus ill-defined. Uph discal band to dorsum, comparatively straight. Large.

*brahminus dokwana*, Evans. (65-68). W. Garhwal, Kumaon, Nepal. R.

γ. As last, but much smaller and darker. Uph band much curved.

*brahminus brahminoides*, M. (50-60). Chumbi Valley. R.

2a (1). Upf inner edge discal spots 1-3 nearer base and not in line with spot in 4, but more in line with inner spot in 5, if present. Tegumen with shoulder. Wings produced, termen F straight.

2 (3). Uph band of even width throughout and veins crossing it black. Tegumen hooks short.

a. Uph band to dorsum in ♂, not always so in ♀. Upf ♂ inner spot in 5 absent. Unf spots in 3 and 4 united, ocellus prominently pupilled. Above band wide, 6 mm.

*padma burnettii*, nov. (76). The great Satyr. Shingarh, Zhob and probably the form occurring on the Safed Koh, Kurram. VR.

β. Very large and the bands curved.

*padma grandis*, Tyt. (82-98). Gilgit. R.

γ. Unf spots in 3 and 4 separate. Above band 4 mm. wide, straight.

*padma padma*, Kollar. (70-85). Kashmir—Sikkim. NR. (= *avata*, M.).

δ. Upf inner spot in 5 present in ♂ and ♀. Uph band to dorsum in ♂ and ♀. Unf ocellus often ill-defined.

*padma loha*, Doh. (80-92). Kumaon—Assam to 8,000 feet. NR.

η. As last but much smaller and bands much narrower. Uph band curved and not as a rule to dorsum in ♂.

*padma chumbica*, M. (65-75). Bhutan, Chumbi Valley, over 9,000 feet. NR.

ξ. As last, but bands pale yellow above and bright yellow below. Occurs as a variety with *chumbica*.

*padma fulva*, Evans. (70-75). Abor Valley and S.-E. Thibet, over 9,000 ft. R.

3 (2). Uph band distinctly narrowing to dorsum, which it never reaches except rarely in ♀; veins crossing it not darkened as a rule. Bronzy sheen above and below paler than last. Tegumen with very long hooks.

a. Uph band very narrow and not entering cell; upf spots of band well separated, only very faintly tinged yellow.

*swaha tellula*, Fr. (60-65). The Common Satyr. Safed Koh. NR. (= *kurrama*, Evans.).

•D11. Aulocera.—The Banded Satyrs. (Plate 13)—*contd.*

β. As *swaha* but band pure white.

*swaha gilgitica*, Tyt. (60-70). Astor. Chilas. Gilgit.

γ. Upf band broad and enters cell; upf discal spots coalesced usually and larger. Above band pale straw, unf tinged pale yellow.

\* *swaha swaha*, Koll. (60-70). Chitral—Sikkim. C.

δ. As last, but upf band bright yellow.

*swaha garuna*, Fruh. Kashmir—Kulu, inner ranges. NR.

4 (1a). Below very pale, white striation predominant; white band broad and straight on H, reaches dorsum. Tegumen without hooks.

*saraswati*, Koll. (65-75). The Striated Satyr. Chitral—Sikkim.

C. (= *dehradunensis*, Niepelt).

## D12. Arge.—The Marbled Whites. (Plate 13).

Above white with irregular sub-marginal brown line and upf narrow irregular brown discal band and dorsum brown. Unh ocelli in 1-3 and 5 and 6, often obscure.

\* *halimede montana*, Leech. (60-65). The Chinese Marbled White. N. Burma. VR.

## D13. Erebia.—The Arguses. (Plate 13).

1a (4a). Antennæ club spatulate. Above velvet dark brown; upf ocellus single pupilled (sometimes unpupilled and very rarely 2). Unf maroon. Unh dark brown, powdered white scales, no ocelli, complete postdiscal row white spots. No ♂ brand.

Kalinda Group.

1 (2a). Upf outer half wing yellow. Upf uniform dark velvet brown.

\* *mani*, DeN. (45-50). The Yellow Argus. Chitral, Kashmir, Ladak, Hunza. R.

2a (1). Upf outer half not yellow. Upf obscure postdiscal ferruginous patch.

2 (3). Upf broad prominent postdiscal ferruginous area and apical ocellus prominently yellow ringed.

a. Upf ocellus not pupilled and uph no tawny patch.

*kalinda chitralica*, Evans. (45-50). The scarce Mountain Argus. Chitral, Gilgit, Chilas. R. (Tytler treats *chitralica* as a race of *mani* and names the following races as well, of very doubtful value: *shandura*, Shandur Pass Chitral; *lorimeri*, Gilgit; *yasina*, Yasin; *kamriana*, Chilas and Gurais.)

β. Upf ocellus pupilled.

\* *kalinda kalinda*, M. (45-50). Kashmir—Kumaon. R.

3 (2). Upf ferruginous area obscure and detached from ocellus, which has no yellow ring, except in ♀.

a. Apical ocellus F much enlarged.

*shallada tarbena*, nov. (45-55). The Mountain Argus. Chitral. NR.

β. Apical ocellus F small.

D13. *Erebia*.—The Arguses. (Plate 13)—contd.

*shallada shallada*, Lang. Kashmir—Kumaon. NR.

4a (1a). Club antennæ gradual.

4b (8a). Above velvet dark brown; upf ocellus bipupilled; uph an ocellus in 2. Unh at least an ocellus in 2.

Scanda Group.

4c (6a). Unh no sub-marginal brown fascia or line; discal brown line or fascia obscure or obsolete.

4 (5). Above uniform. No ♂ brand.

a. Unh finely irrorated; ocellus in 2 minute, no ocellus in 1, white spots 4, 5 and 6 obscure, also brown discal line traceable. Unf maroon.

*nirmala materta*, Fruh. (50-55). The Common Argus. Chitral. VC. (= *reducta*, Evans).

β. Unf dark brown and unh no white irrorations, ocellus in 2 prominent, usually no ocellus in 1 and rarely ocellus in 4, white spots prominent, no discal line.

*nirmala daksha*, M. (45-50). Kashmir. C. (= *modesta*, M.).

γ. Transitional between last and next. Unf dark maroon, unh white irrorations weak, ocelli never so well developed as is usually the case in *nirmala*.

*nirmala kala*, Evans. (45-50). Murree. VC.

δ. Unh and apex unf overlaid pale grey resembling *scanda*.

*nirmala scandina*, Fruh. (50-55). Bashahr, Kunawur. NR.

η. Unf bright maroon. Unh white irrorations prominent and often broad discal line; ocelli very variable, may be only 1 or 2 or a complete row.

\* *nirmala nirmala*, M. (50-55). Kangra—Kumaon. VC. (= *intermedia*, *cashapa*, M.).

5 (4). Above outwardly prominently paler. Unh white irrorations very prominent, especially towards dorsum; ocelli in 1 and 2 prominent and subequal, none elsewhere, white dots prominent. ♂ upf modified scales on disc.

a. Smaller.

*scanda scanda*, Koll. (50-60). The Pallid Argus. Kashmir—Kumaon and Lower Sikkim. NR.

β. Larger and more richly marked.

*scanda opima*, Watkins. (68-76). Lachung, Upper Sikkim. R.

6a (4c). Unh prominent sub-marginal and discal fasciæ or lines; striation prominent and uniform; never more than ocelli in 1 and 2.

6 (7). Unh prominent submarginal and discal lines, not fasciæ; sub-marginal line clear of the ocelli, which are prominent. F dorsum longer than the anal *chama* brand.

*hybrida*, But. Evans. (70-75). Pallid Argus. Simla—Kumaon. NR. (= *nada*, M.).

7 (6). Unh prominently narrowing discal fasciæ, not lines, and former runs into the o; veins crossing, widening to apex. F costa longer than or equal to the low p. than DSF unh fasciæ and ocelli tend to obsolescence.

a. Large. Uph narrow f. *Gus* to ocellus. Apex F produced and termen straight. *Q* ant area modified scales on disc upf. Ternal ocelli unh unh

Kashmir—  
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•D13. *Erebia*.—The Arguses. (Plate 13)—*contd.*

*annada cæca*, Watkins. (60-70). The Ringed Argus. Kashmir—Sikkim. NR.

β. Unh tornal ocelli pupilled. Very like last.

*annada annada*, M. Nepal, Bhutan. VR.

γ. Smaller. Upf ocellus with a very broad ring. Apex F rounded. No modified scales in ♂. Unh white irroration more striated.

\* *annada orixa*, M. (55-60). Assam—N. Burma. NR. (= *ophthalmica*, Stg.).

δ. As last, larger. Upf ocellus with even broader ring. Unh white irroration very prominent, also dark fasciæ and there is a prominent sub-basal fascia as well; tornal ocelli obsolete. No ♂ brand.

*annada suroia*, Tyt. (60-65). Manipur. R.

η. Unh white irroration reaching apex: dark bands sharply defined and traces of sub-basal fascia. Very like last.

*annada watsoni*, Watkins. (52-56). Chin Hills. R. (= *annadina*, Watkins, Salween river).

8a (4b). Above brown; ocellus with yellow, not fulvous ring.

8 (9). Uph prominent ocellus in 2. Upf second pupil to ocellus absent or minute. Below pale brown; unh striated and with 2 large double ocelli in 1-2 and 5-6, no discal line. No ♂ brand. Wings rounded.

Hyagriva Group.

\* *hyagriva*, M. (42-46). The Brown Argus. Kashmir—Kumaon. R.

9 (8). Uph and unh no ocelli. Unf prominent dark discal line from inside ocellus to v1 and postdiscal line to v1, between which ground colour is paler. ♂ prominent dark brown brand mid 1 to base 4, entering cell. Wings produced, especially tornus H which is lobed.

Narasingha Group.

a. Below rather pale brown, more or less frosted over white scales F and evenly striated H, no fasciæ.

*narasingha narasingha*, M. (55). The Mottled Argus. Sikkim, Abor Valley. VR.

β. Below paler and with an ochreous tinge, H not striated or uniform, costa, apex and tornus prominently darker.

*narasingha dohertyi*, Evans. (55). N. Burma—Shan States. VR.

D14. *Ypthima*.—The Rings. (Plate 13).

1 (2a). Unh no ocelli or at most a dot in 2. Uph ocellus in 2. Unh variegated, basal area and mid termen ochreous brown, rest nearly white. Unf no loop under ocellus or fascia. No ♂ brand.

Megalomma Group.

*megalomma megalia*, DeN. (45). The Ringless. N. Burma. VR.

2a (1). Unh with ocelli, though often obsolete in DSF.

2b (12a). Unh single apical ocellus in 6.



D14. *Ypthima*.—The Rings. (Plate 13)—*contd.*

2c (8a). Unh only 2 subternal ocelli in 1 and 2, no ocellus in 3 and uph only ocellus in 2.

*Asterope* Group.

2d (5a). Unf no loop round ocellus extending to 1 or 2.

2e (4). Unf no prominent sub-marginal dark fascia, at least in WSF. ♂ with brand upf.

2 (3). Unh apical and ternal ocelli not in line, ocellus in 2 shifted out. DSF variable, may have a submarginal fascia unf and two discal fasciæ unh.

*inica*, *Hew.* (30-34). The Lesser Threering. Punjab—Bengal. NR. (= *ariaspa*, *M.*: *rara*, *But.*: *alkibie*, *dædalea*, *complexiva*, *Swin.*).

3 (2). Unh apical and ternal ocelli in line. No DSF.

a. Unf striation obsolete. Below ochreous tinge. Upf ocellus ring obscure.

\* *lycus lycus*, *DeN.* (37-40). The Plain Threering. Assam. R.

β. Unf striation prominent. Below grey.

*lycus lycoides*, *Wat.* (37-40). N. Burma. R.

4 (2e). Below sub-marginal fascia F and mid termen H; no discal fascia F. No ♂ brand, no DSF.

a. Unf sub-marginal fascia prominent and widening at tornus. Unh apical ocellus not much larger than rest. Small.

*nareda nareda*, *Koll.* (40-45). The Large Threering. Kashmir—Kumaon. NR.

β. Unf submarginal fascia even. Unh apical ocellus much larger than rest and striation coarser.

*nareda newara*, *M.* (45-50). Sikkim—Assam. NR.

γ. As last, but smaller.

*nareda sarcaposa*, *Fruh.* (40-45). Assam—Shan States. NR.

5a (2d). Unf with discal fascia, which forms a loop under the ocellus with the sub-marginal fascia. No ♂ brand. With DSF.

5 (6a). Large. Below striation coarse and wide. Unh in WSF ocellus very large.

*watsoni*, *M.* (40-45). The Looped Threering. Manipur—S. Burma. NR.

6a (5). Small. Striation below fine.

6 (7). Unh WSF ocelli very small; in DSF 2 more or less prominent discal lines.

\* *asterope mahratta*, *M.* (30-37). The Common Threering. India, Baluchistan, Chamba—Assam. C. (= *alemola*, *Swin.*).

7 (6). Unh WSF ocelli large; in DSF discal lines obscure or absent. Unf loop may be obscure.

*burmana*, *Evans.* (28-36). N. Burma. NR.

8a (2c). Unh 3 ternal ocelli in 1, 2 and 3. Upf usually ocelli in 2 and 3 at least. No ♂ brand.

Hubneri Group.

8b (10a). Unh subternal ocelli on a dark band. Seasonal forms not strongly marked.

8 (9). Upf dark bands from below invisible and ocellus ring obscure.

*ypthimoides*, *M.* (40-55). The Palni Fourring. S. India. NR. (= *robinsoni*, *Dist.*).



D14. *Ypthima*.—The Rings. (Plate 13)—*contd.*

9 (8). Upf dark bands and ocellus ring prominent. Below paler; H whitish, dark bands and ocelli rings prominent.

*chenui*, *Guer.* (36-46). The Nilgiri Fourring. S. India. NR.

10a (8b). Unh subternal ocelli not on a dark band. Seasonal forms strongly marked.

10 (11). Upf ternal half white.

*ceylonica*, *Hew.* (30-35). The White Fourring. Ceylon. S. India—Bengal, C. (= *gellia*, *Fr.*).

11 (10). Upf not white.

a. Below all fasciæ obsolete.

*hubneri kasmira*, *M.* (35-40). The Common Fourring. Kashmir—Kulu. NR.

β. Below all fasciæ usually prominent. Very variable, especially in DSF.

*hubneri hubneri*, *Kirby.* (30-40). India. Burma. VC. (= *apicalis*, *howra*, *M.*; *catharina*, *But.*; *jocularia*, *Swin.*).

12a (2b). Unh more than one apical ocellus and that in 5 always prominent.

Baldus Group.

12b (14a). Unh the ternal ocelli in a straight line or that in 2 slightly shifted out.

12 (13). Unh only 2 subternal ocelli usually, ocellus in 3 absent; 3 sub-apical ocelli in 4, 5 and 6. Below fasciæ prominent. No ♂ brand. No DSF.

*bolanica*, *Mar.* (35-40). The Desert Fourring. Baluchistan—Kashmir. R.

13 (12). Unh 3 subternal and 2 subapical ocelli (rarely an ocellus in 4 and rarely that in 6 absent).

a. Small. ♂ upf no ocellus. Below pale; unf discal band may be absent. Unh no discal band. ♂ brand more or less prominent.

*avanta singala*, *Fd.* (30-35). The Jewel Fourring. Ceylon. S. India—Central Provinces. NR. (= *thora*, *M.*).

β. ♂ upf ocellus prominent. Below whitish, with prominent bands. ♂ brand absent.

*avanta striata*, *Hamp.* (35-45). Nilgiris. R.

γ. ♂ upf no ocellus. Below dark markings more or less prominent ♂ brand prominent.

*avanta avanta*, *M.* (32-38). Kashmir—Sikkim. NR. (= *ordinata*, *But.*).

δ. ♂ upf prominent ocellus. Pale and small. Below pale and fasciæ obscure. ♂ brand faint or absent.

*avanta cerealis*, *Wat.* (32-36). Burma dry zone, R.

γ. As typical *avanta*, but larger and striation below coarser.

*avanta bara*, *Evans.* (38-42). Sikkim—Burma. NR.

14a (12b). Unh ternal ocelli not in line, ocellus in 2 shifted in

D14. *Ypthima*.—The Rings. (Plate 13)—*contd.*

β. Unh discal fascia always visible. Paler.

*philomela peguana*, *Evans.* N. Burma. NR.

15a (14). Unh ocellus in 6 more or less prominent. Larger.

15b (21). Unh the 2 apical ocelli not prominently larger than the rest.

15c (18a). Under 45 mm. expanse.

15d (17). ♂ upf prominent brand; discal line not visible. DSF well marked.

15 (16). Below striation coarse and sub-basal band prominent as well as the discal. Uph discal line always more or less well marked.

α. Unh ocelli usually well separated. WSF discal bands very often most prominent on a pale ground.

*baldus madrasa*, *Evans.* (36-43). The Common Fivering. S. India. VC.

β. Unh apical pair of ocelli and also central pair usually confluent. Small, pale, especially below, fasciæ more obscure.

*baldus satpura*, *Evans.* (32-36). Pachmarhi. NR.

γ. Very variable; unh in WSF ocelli often very large and confluent, dark and bands not so prominent as in α.

\* *baldus baldus*, *F.* (35-48). Chamba—Burma. VC. (= *humei*, *El*: *newboldi*, *Dist*: *marshalli*, *But.*).

16 (15). Below striation fine and darker; sub-basal bands F and H obsolete. Uph discal band not visible. NR.

*indecora*, *M.* (35-40). The Western Fivering. Kashmir—Kumaon. NR.

17 (15d). ♂ upf brand absent and discal line visible F and H. Below sub-basal fascia obscure.

α. Very dark, especially below. DSF strongly marked and variegated.

*similis affectata*, *El.* (38-42). The Eastern Fivering. Assam. R.

β. Very pale, below whitish, sparsely striated. Termen F very straight. DSF ocellated, not strongly marked.

*similis yoma*, *Evans.* (35-42). Pegu Yoma. R.

γ. Very like *baldus*. DSF ocellated, not strongly marked.

*similis similis*, *El.* (40-45). Karens—Dawnas. NR.

18a (15c). Over 45 mm. expanse.

18 (19a). Below very pale with dark fasciæ very prominent and discal fascia H straight. Above pale, prominent ♂ brand. Unh tornal double ocellus separated. DSF strongly marked.

*savara*, *GrS.* (45-50). The Pallid Fivering. Manipur—Burma. C.

19a (18). Unh discal fascia, if present, angled out opposite end cell, fasciæ never so prominent. DSF ocellated.

19 (20). Unh double tornal ocellus separated, apical pair separate.

α. Large and dark. No ♂ brand.

*methora methora*, *Hew.* (50-55). The Variegated Fivering. Sikkim—Assam R. (= *gela*, *Fr.*).

β. Smaller and rather paler. ♂ brand obscure. Below fasciæ very faint.

*methora sobrina*, *El.* (43-52). Karen Hills. R.

**D14. Ypthima.—The Rings. (Plate 13)—contd.**

20 (19). Unh double tornal ocellus with single iris, apical ocelli with irides touching or coalesced.

a. Dark. Below fasciæ absent on H and obscure on F. No ♂ brand. F produced. Unh ocellus in 5 shifted in.

*dohertyi persimilis*. EL. (50-55). The Great Fivering. Manipur. VR.

β. Pale. Below whitish, sparsely striated, fasciæ obscure. ♂ brand prominent. Uph all ocelli showing.

*dohertyi dohertyi*, M. (52-56). Shan States—Dawnas. R.

21 (15b). Unh apical 2 ocelli much larger than the rest, tornal double ocellus with single iris. No DSF.

a. Small, dark, ocelli small. Unh apical ocelli separated by iris, the irides being coalesced. ♂ brand prominent or obscure. Below no fasciæ.

*sakra nikæa*, M. (45-50). The Himalayan Fivering. Murrec—Kumaon. C. (= *matinia*, Fr.).

β. Larger, paler, ocelli larger. Unh apical 2 ocelli with a single iris. ♂ brand obscure. Below no fasciæ.

*sakra sakra*, M. (48-55). Sikkim. C.

γ. As last, paler. Unf discal and sub-marginal fascia show obscurely and rarely also on H.

\* *sakra austeni*, M. (48-55). Assam—Karen Hills. C.

(Note.—*iarba*, DeN. was described in error from India.)

**D15. Zipoetis.—The Catseyes. (Plate 13).**

Without dry season form.

1 (2). Velvet black with broad white band F and H. Unh 2 small tornal ocelli, large one in 2, double one 5-6, small one in 7, all inwardly bordered by a pale line.

\* *saitis*, Hew. (60-65). The Tamil Catseye. S. India. R.

2 (1). Above dark velvet brown, no pale bands; 3 very narrow sub-terminal lines; apex F paler. Unh ocelli as in last.

\* *scylax*, Hew. (55-62). The Dark Catseye. Sikkim—Shan States. NR.

**D16. Orsotriæna.—The Nigger. (Plate 13).**

Above dark brown, unmarked, but the discal band from below shows faintly. Below crossed by a white band. Unf ocelli in 2 and 5. Unh in 2, 5 and 6. DSF strongly marked.

a. Below white band broad and tapering to costa F and dorsum H.

*medus mandata*, M. (42-52). The Nigger. Ceylon—S. India. C. (= *gamaliba*, But.).

β. Below discal band narrow and even; in DSF may be absent or replaced by a dark line.

\* *medus medus*, F. (45-55). Sikkim—Burma. Andamans. C. (= *hesione*, Cr. : *runeka*, M. : *cinerea*, But : *turbata*, Fruh.).

D16. *Orsotricæna*.—The Nigger. (Plate 13)—*contd.*

γ. Only WSF occurs. Larger, paler. Below ocelli larger, ochreous rings paler, conjoined at apex H: subterminal lines more prominent, discal band narrower.

*medus nicobarica*, nov. All Nicobars. NR.

D17. *Erites*.—The Cyclops. (Plate 13).

Seasonal forms slightly marked.

1a (3). Upf large ocellus in 2 only, remainder from below show faint. Apex F produced.

1 (2). Unh inner band sharply angled in middle as is the discal band. Uph ocelli with broad yellow rings.

\* *angularis*, M. (50-60). The Angled Cyclops. Karens—S. Burma. NR. (= *pseudofalcipennis*, Fr.).

2 (1). Unh inner band straight or slightly curved, discal band sharply angled.

a. F termen concave opposite end v5. Upf ocellus in 2 pupilled. Uph ocelli small and narrow ringed, no bands showing. Unh ocelli small, bands broad and dark.

*falcipennis falcipennis*, WM. and DeN. (50-55). The Common Cyclops. Cachar—Chin Hills. R.

β. F termen even. Upf ocellus not pupilled. Uph ocelli with broad rings and bands show through.

*falcipennis rotundata*, DeN. (50-60). Karen Hills—S. Burma. C. (= *beelingia*, M.).

3 (1a). Upf all ocelli marked. Apex F not produced. Uph and unh as *rotundata*.

*argentina delia*, Mart. (50-55). The Eyed Cylops. Tavoy—S. Burma. VR.

D18. *Ragadia*.—The Striped Ringlet. (Plate 13).

a. Above all 4 bands of the same shade, dusky. Unh ocelli in 3, 4 and 5 with irides conjoined.

*crisilda crito*, DeN. (42-46). Bhutan—Manipur. R.

β. Above pale band (3rd from base) clear white, narrow. Uph sub-marginal band very narrow. Uph dark band bearing the ocelli below much wider than the pale bands on either side. Unh ocelli in 3, 4 and 5 with irides conjoined.

*crisilda crisilda*, Hew. (42-46). Cachar—Assam. NR.

γ. Above discal white band broader on F also sub-marginal band H, where the dark band bearing the ocelli below is only slightly wider than the pale bands; upf sub-marginal band narrow white. Unh ocelli in 4 and 5 with irides conjoined or separate.

*crisilda critolaus*, DeN. (42-46). Karens—Dawnas. R.

δ. Above as last, but smaller and darker, white bands narrower. Upf sub-marginal band may be obsolete.

\* *crisilda critolina*, Evans. (37-42). Dawnas to S. Burma. R.

**D19. Coelites.—The Blue Catseyes. (Plate 14).**

Above dark brown, bases broadly glossed purple blue; below dull brown with a diffused pale band. ♂ uph long erect hairs along v1 and a prominent dark band along outer two-thirds of v1.

1 (2). Unh ocelli in 4 and 5 much smaller than ocelli in 2, 3 and 6; no discal band; dark discal line before ocelli angled out opposite end cell.

*nothis adamsoni*, M. (75-85). The Scarce Catseye. Assam. Bhamo. VR.

2 (1). Unh all ocelli small and equal, prominent pale straight discal band and no dark discal line.

\* *epiminthia binghami*, M. (75-85). The Blue Catseye. Dawnas—S. Burma. R.

**D20. Neorina.—The Owls. (Plate 14).**

1 (2a). H no tail at v3: Upf broad yellow discal band.

\* *hilda*, Wd. (80-95). The Yellow Owl. Sikkim—Assam. R.

2a (1). H tail at v3.

2 (3). Upf broad white discal band. Upf no ocelli.

*patria westwoodi*, M. (100-110). The White Owl. Assam—N. Burma. R.

3 (2). Upf broad yellow discal band. Upf ocelli in 2 and 3.

*chrishna archaica*, Fruh. (95-105). The Tailed Yellow Owl. S. Burma. VR.

**D21. Anadebis.—The Diadems. (Plate 14).**

1 (2). Above and below complete postdiscal row ocelli.

\* *himachala*, M. (60-85). The Dusky Diadem. Sikkim—N. Burma. NR. (= *sita*, Fd.).

2 (1). Above and below complete postdiscal row white spots, which are very large on H.

\* *diademoides*, M. (80-90). The White Diadem. Karens—S. Burma. R.

**D22. Melanitis.—The Evening Browns. (Plate 14).**

1 (2a). WSF below grey, striated dark brown, with large prominent ocelli. Upf always prominent, white pupilled, black spot in 3, extending into 4 and a white spot against its upper, outer, edge; paler above the spot. DSF the black and white spots prominent with on the inner and lower side a narrow, prominent, sharply defined ochreous bar; in 5 a similar ochreous bar that very rarely extends above 5. F produced; in WSF termen just angled below v5, prominently so in ♀ and in DSF ♂, falcate in DSF ♀. H termen equally tailed at v1 and v3.

\* *teda ismene*, Cr. (60-80). The Common Evening Brown. Ceylon, India, Burma, Andamans. VC. All Nicobars. VR. (= *determinata*, But.).

D22. *Melanitis*.—The Evening Browns. (Plate 14)—*contd.*

2a (1). WSF never with large ocelli below. DSF ochreous markings never so restricted and so well defined.

2 (3). WSF below ocelli small, but more or less complete and usually well formed. DSF with termen ashy, especially so in ♂. F WSF apex not produced and termen straight or very faintly angled below v5. H WSF tailed only at v3 and termen straight to tornus; DSF tail at v1 much shorter than tail at v3.

α. WSF ♂ above very dark, unmarked, apex F paler; ♀ upf black spots prominent, white spots small or absent, pale area above to costa. Below ♂ very dark, ♀ ferruginous, ocelli not so well formed as usual. DSF no ochreous markings upf, black and white spots more or less prominent and pale costal bar.

*phedima tumbra*, M. (70-80). The Dark Evening Brown. Ceylon. NR.

β. Smaller and not so dark. WSF below ocelli well developed and discal line prominent, ferruginous.

*phedima varaha*, M. (60-70). S. India. NR. (= *ampa*, Swin.).

γ. WSF with costal ochreous bar beyond cell, no black and white spots; ♀ entire apex ochreous with small pupilled ocellus in 3, indistinct black spot above and 2 small apical black spots. DSF broad yellow apex, entering cell and to margin in ♀, black and white spots prominent in ♀, small and well separated in ♂ as in ♀ WSF.

*phedima bethami*, DeN. (75-85). Pachmarhi. NR.

δ. As large as *tumbra*. WSF ♂ below bands ill-defined. DSF upf ochreous mark in ♀ as in No. 1, but not sharp defined and reaches costa.

*phedima galkissa*, Fruh. (60-75). Kashmir—Kumaon. NR.

η. As last, but larger and darker, especially in DSF. DSF ♂ ochreous costal bar present.

*phedima bela*, M. (65-80). Sikkim—N. Burma. C. (= *aswa*, M.: *tristis*. Fd.).

ζ. As last, but smaller. DSF ochreous markings reduced. Below ocelli or spots smaller. WSF below tornus edged rich reddish brown.

*phedima ganapati*, Fruh. (65-75). Karen Hills—S. Burma. C. (= *aswina*, Fr.).

3 (2). WSF below small white spots rather than ocelli. DSF margins not ashy.

α. Above DSF and WSF nearly alike; black spots more or less prominent, especially white spots in ♂; margin F shining black in ♂ (slightly powdered in DSF), dusted ochreous in ♀ (especially in WSF); pale costal bar beyond cell dusky in ♂, dull ochreous in ♀. Below dark discal line prominent in WSF and apex in ♂ yellowish. DSF pale smoky, with black basal patches, more prominent in ♂. F produced and termen prominently angled below v5, falcate in ♀.

*zitenius gokala*, M. (75-85). The Great Evening Brown. S. India. R. (= *aculeata*, Hamp.).

β. As next, but smaller and apical ochreous area very wide, black spots prominent.

*zitenius kalinga*, M. (75-85). Godaveri Valley. R.



**D22. Melanitis.—The Evening Browns. (Plate 14)—contd.**

γ. WSF upf black spots obscure and white spots usually absent: prominent costal ochreous bar, which especially in ♀, is often continued nearly to the tornus outside the black spots. DSF ochreous markings wider, black and white spots prominent and ochreous area encircles them; ochreous area reaches termen in ♀. Shape as in No. 1 in both seasonal forms.

\* *sitenius sitenius*, *Herbst.* (80-95). Kumaon—Karen Hills. NR. (= *vamana* M.: *duryodana*, *Fd.*: *decolorata*, *semifasciata*, *Fr.*).

δ. Above ♂ WSF unmarked and ground colour with a dull ferruginous tinge. ♀ black spots absent or at most 2 small dots in 3 and 4; the ochreous costal bar continues as a broad even discal band to tornus, where it becomes duskier. DSF as last, smaller and ochreous markings more restricted.

*sitenius auletes*, *Fruh.* (75-85). Dawnas—S. Burma. R.

η. DSF as γ. WSF ♂ upf ochreous costal bar restricted to 5 and 6, no black or white spots; ♀?

*sitenius andamanica*, *Evans.* (70-85). Andamans. R.

**D23. Cylogenes.—The Evening Browns. (Plate 14).**

1 (2). Above strong purple tinge. Unf apical yellow band narrow and not to termen. ♂ upf large black brand bases 2-5 and end cell.

\* *suradeva*, M. (75-85). The Branded Evening Brown. Sikkim—Bhutan. R.

2 (1). Above no purple tinge (faint in ♀). Upf yellow band broad and reaches termen. No ♂ brand.

*janetæ*, *DeN.* (90-95). The Scarce Evening Brown. Bhutan—Assam. VR.

**D24. Parantirrhœa.—The Travancore Evening Brown.**

Above ♂ dark brown with a prominent violet purple band upf: ♀ with 2 obscure narrow yellow bands and a series of white discal dots. ♂ upf brand on dorsum and wing folded over in middle, v1 much distorted; upf prominent brand near end v1.

*marshalli*, *WM.* (55-65). The Travancore Evening Brown. Travancore, Coorg. R.

**D25. Elymnias.—The Palmflies. (Plates 14-15).**

1a (12a). ♂ upf no brand; uph brand base 6, extending to cell and 7, covered by tuft of hairs, which may be in 1 or 2 pencils.

1b (5a). F apex not produced.

1a (3a). ♂ tuft in 2 pencils.

1 (2). Upf margin not chestnut, usually with blue or white spots. ♀ tawny with white banded black apex upf.

D25. Elymnias.—The Palmflies. (Plates 14-15)—*contd.*

a. ♂ uph margin broad yellow; upf blue spots faint. ♀ uph margin ochreous.

*hypermnestra fraterna*, But. (60-80). The Common Palmfly. Ceylon. C. (= *merula*, Swin.).

β. ♂ ♀ long tail at v3 H. ♂ upf bluish white spots prominent. ♀ uph white sub-marginal spots obsolete.

*hypermnestra caudata*, But. (65-80). S. India. NR.

γ. As α but ♂ uph margin chestnut and upf blue spots prominent. ♀ uph margin dark brown.

\* *hypermnestra undularis*, Drury. Bengal. Dun—N. Burma. C.

δ. As last, but upf ♂ blue spots more developed and contiguous, extending often to upper part H. ♀ dark margin broader.

*hypermnestra tinctoria*, M. S. Burma. C.

♀ v. *paraleuca*, Fruh. Uph disc whitish. NR.

2 (1). Upf margin chestnut. ♂ ♀ alike. Above unspotted, except rarely in ♀.

a. Above chestnut margins very wide and pale.

*cottonis obnubila*, Mar. and DeN. (65-75). The Chestnut Palmfly. Karen Hills—S. Burma. R.

β. Chestnut margins narrow and dark. ♀ uph with obscure sub-marginal white spots.

*cottonis cottonis*, Hew. (70-80). Andamans. NR.

3a (1a). ♂ tuft single. H caudate at, v4.

3 (4). Unh prominent ocelli, appearing uph in ♀ on a pale margin.

\* *panthera minus*, WM. and DeN. (65-75). The Nicobar Palmfly. Nicobars. NR. (= *dolorosa*, But.).

4 (3). Unh no ocelli. ♂ ♀ above dark brown, broad oblique white band F and H, bearing outwardly on H a row of white dots.

\* *dara dædalion*, DeN. (60-65). The White-banded Palmfly. Dawnas—S. Burma. R.

5a (1b). F apex produced. ♂ tuft single in No. 9, double in rest.

5b (11). Termens scalloped.

5c (7a). Upf dark brown with no discal markings. H caudate.

5 (6). Above narrow pale margin F and H outer third pale yellowish white, striated dark brown.

\* *singala*, M. (75-90). The Ceylon Palmfly. Ceylon. NR.

6 (5). Above termen broadly dull blue and dull chestnut at tornus H (bright chestnut in ♀). Unh white spot in 7 prominent.

*pealii*, WM. (75-85). Peal's Palmfly. Assam. VR.

7a (5c). Above markings not confined to margin.

7 (8a). Above dull greenish blue, all veins broadly black. Caudate.

a. Above streaks between veins bluish.

\* *nesæa timandra*, Wall. (75-85). The Tiger Palmfly. Sikkim—N. Burma. NR.

β. Above streaks greenish; in ♀ veins broad chestnut instead of black.

*nesæa cortona*, Fruh. S. Burma. NR.

8a (7). Upf dark brown with discal blue or white markings and apex shot blue. Only caudate in *saueri*.

D25. Elymnias.—The Palmflies. (Plates 14-15)—*contd.*

8b (10). Upf markings consist of spots, 2 spots in 3 and often in 2.

8 (9). Upf ♂ spot in cell and basal half of 2.

a. As next, smaller. Uph irregular white terminal spots. Below more broadly whitestreaked and dotted.

*malelas nilamba*, Fruh. (75-85). The Spotted Palmfly. Kumaon, Nepal. R.

β. ♀ uph whitish, striated dark brown, veins broad black; below dull, basal half hardly striated; outer half evenly striated.

\**malelas malelas*, Hew. (80-100). Sikkim—Dawnas. NR. (= *leucocyna*, But.).

9 (8). Upf no spot in cell. Below highly variegated, rather as No. 7, mottled and striated all over. H more dentate. ♀ upf apex ferruginous.

*casiphone saueri*, Dist. (80-95). The Malayan Palmfly. Dawnas—S. Burma. VR.

10 (8b). Upf markings consist of broad blue or purple stripes, single in 3 and 2. Uph postdiscal row small white spots. ♂ ♀ alike.

a. Large.

*patna patna*, Wd. (80-100). The Blue Striped Palmfly. Kumaon—N. Burma. NR.

β. Smaller. H apex rather acute and termen straight.

*patna patnoides*, M. (75-90). Karen Hills—Dawnas. R.

11 (5b). Termens even. Apex F sharp pointed and termen concave below. Upf with broad discal blue streaks.

\**penanga chelensis*, DeN. (70-75). The Pointed Palmfly. Assam—Burma. VR.

12a (1a). ♂ upf brand mid 1b, covered by recumbent tuft hairs; uph brand as in rest, tuft single.

12 (13). Upf bluish white with broad black veins. Uph dorsal two-thirds white or yellowish, unmarked. Unh dorsal half yellow and usually at base 1b and 1c a black bordered red area.

a. ♂ above black veins well separated. Uph white.

*vasudeva vasudeva*, M. (80-90). The Jezabel Palmfly. Sikkim. R. (= *thycana*, Wall.).

β. DSF upf greenish yellow spaces; H yellow; ♀ F all bluish white with narrow black veins. WSF nearly as next.

\**vasudeva deva*, M. (80-90). Assam. R.

γ. ♂ more streaked green and in ♀ broad black veins form a confluent discal band. Unh ♀ red basal area absent.

*vasudeva burmensis*, M. (80-90). Burma. R.

13 (12). Above dark brown with termen broadly bluish green. Apex F not produced, costa no longer than dorsum,

*esaca andersonii*, M. (60-65). The Green Palmfly. Mergui.

## E. AMATHUSIIDÆ

## E. Amathusiidæ.—The Amathusiids. Key to Genera.

1a (10a). F. dcu a tubular vein throughout. H v1a always longer than the body, if v1b is as long as v2.

1b (7a). H cell completely open.

1c (4a). F lower end cell nearer termen, ends at angulation of v4.

1d (3). F vs 11 and 12 free.

1 (2). F origin v10 from before half way along v7, far from origin v9; upper dcu long, lower nearly straight. H quadrate. ♂ uph small tuft mid v1.

*Xanthotænia*, Wd. Pan. (Plate 15).

2 (1). F origin v10 from beyond half way along v7; origins 8, 9 and 10 close together; upper dcu very short lower very concave at upper end. ♂ uph brand about base 6 and a prominent tuft from the mv below base cell. F dorsum bowed.

*Faunis*, Hub. The Fauns (plate 15). (= *Clerome*, *Melanocyma*, Wd.).

3 (1d). F vs 11 and 12 anastomosed, cell as in No. 2. ♂ tuft along v1b near tornus uph, inconspicuous.

*Emona*, Hew. The Dryads. (Plate 16).

4a (1c). F lower end cell nearer base, angulation of v4 far beyond end cell.

4 (5a). F vs 11 and 12 free, v10 absent, ♂ uph brand above origin v7 and tuft from the base cell; unf brand in 1b near base.

*Sticophthalma*, Fd. The Junglequeens. (Plate 15).

5a (4). F vs 10 and 11 anastomosed to v12.

5 (6). F vs 5 and 6 well separated at base, 6 much nearer 7. H v4 nearly touches v5. ♂ unf base 1a and 1b polished; uph tuft from cell near base, brand as in last may be present.

*Thaumantis*, Hub. The Jungleglories. (Plate 16). (= *Nandogæa*, M.).

6 (5). F vs 5 and 6 approximate at base, far from v7. H v5 curved, not angled. ♂ abdomen with prominent dark tuft of hairs on either side; uph small tuft on 1b and with or without a very large black brand with its centre at base of 7, covered by a tuft of hairs from base cell and a second tuft from base 6.

*Thauria*, M. The Junkleking. (Plate 15).

7a (1b). H cell closed more or less, tornus produced and more or less lobed.

7b (9). F no spur from v4.

7 (8). F veins 11 and 12 free. ♂ uph fold and tuft in 1b and long erect hairs along base v1; abdomen with a tuft on either side.

*Amathusia*, F. The Palmking. (Plate 16).

8 (7). F vs 11 and 12 anastomosed. ♂ uph large dark brand in 2, extending to base of 1c and 2; prominent tuft below v1b near base, v1b distorted at base and hairy.

*Amathuxidia*, Stg. The Kohinoor. (Plate 16).

9 (7b). F v4 with spur towards v5 from its angulation beyond cell: vs 10 and 11 anastomosed to 12. ♂ unf dorsum polished and

## E. Amathusiidæ.—The Amathusiids. Key to Genera—contd.

bowed, v1 also bowed; uph with 3 tufts overlying brands, viz., base 7, near base cell, near end cell and also a fourth erectile tuft on v1b towards base, v1b much distorted.

*Zeuxidia*, Hub. The Saturns. (Plate 16).

10a (1a). F dcu incomplete as a tubular vein in the middle. H produced, v1b as long as v2, but v1a not longer than body.

10 (11). F v10 present; vs 10 and 11 anastomosed to v12. ♂ uph brand about base 3 and in 1c.

*Discophora*, Bdv. The Duffers. (Plate 16).

11 (10). F v10 absent; v11 anastomosed to v12. ♂ uph prominent large hairy patch all over cell.

*Enispe*, Db. The Caliphs. (Plate 16).

## KEY TO SPECIES.

## E1. Xanthotænia.—Pan. (Plate 15).

Above chestnut brown; upf with prominent yellow band and subapical spot. Below ocellated, ground yellow brown.

\**busiris*, Wd. (60-70). Pan. Dawnas—S. Burma. (*obscura*, M.).

## E2. Faunis.—The Fauns. (Plate 15).

1a (3). Above fulvous brown, no dark markings showing through. ♂ no brand on v1a.

1 (2). Below uniform dark brown, discal yellow spots small, dark lines dull, discal line much curved at ends and on H looped to the basal line.

\**arcesilaus*, F. (65-75). The Common Faun. Sikkim—Burma. C.

2 (1). Below pale discal spots very large, dark lines narrow and prominent, straighter, on H looped to the outer line.

a. Below pale spots yellow. Unf discal line straight at upper end, looped to outer line at lower end.

*eumeus assama*, Wd. (85-95). The Large Faun. Assam. N. Burma. R.

β. Below pale spots white. Unf discal line curved at upper end.

*eumeus incerta*, Stg. (80-90). Shan States. VR.

3 (1a). Above smoky whitish with dark bands showing through from below; H tornal area broadly yellow. Below very prominent dark bands on a smoky ground.

\**faunuloides*, DeN. (100-112). The Pallid Faun. Chin Hills. VR. (The plate represents the allied *faunula* from the Malay peninsula).

## E3. Aemona.—The Dryads. (Plate 16).

1 (2). Above ochreous yellow with dusky apex F, no veins darkened. In DSF outer discal band uph obscure and ocelli from below showing through more or less.

*amathusia*, Hew. (75-90). The Yellow Dryad. Sikkim—Assam. N Burma. R. (= *pealii*, WM.).

E3. *Aemona*.—The Dryads. (Plate 16)—*contd.*

2 (1). Above veins darkened on terminal half F: ♀ entirely whitish except ochreous tornal area H.

a. ♂ yellow, turning whitish outwardly on F.

\* *lena haynei*, Tyt. (80-100). The White Dryad. Shan States. NR.

β. ♂ as ♀, whitish.

*lena lena*, Atk. Karens. R.

E4. *Sticopthalma*.—The Junglequeens. (Plate 15).

1 (2a). Uph submarginal dark line narrow. Above bright chocolate brown broad yellow pre-apical band F and margin H.

a. Upf pre-apical band to tornus; uph yellow margin broad. Above inner sub-marginal markings obscure or absent.

*nourmahal nurinissa*, DeN. (95-105). The Chocolate Junglequeen. Bhutan. R.

β. Upf pre-apical band not to tornus; uph yellow margin narrow. Above inner sub-marginal markings narrow and prominent.

\**nourmahal nourmahal*, Wd. Native Sikkim. Naga Hills. R.

2a (1). Uph dark sub-marginal marking large and prominent.

2 (3a). Uph no dark spots on a pale ground inside the broad dark sub-marginal line; basal area bright chocolate brown from base merging into dark brown disc, whence margin is bluish white, bearing the dark sub-marginal band. Upf base chocolate brown, outer area bluish white.

a. Above milky white. Uph pale terminal area narrow.

*camadeva camadeva*, Wd. (125-150). The Northern Junglequeen. Sikkim. NR.

β. Above milky white areas suffused violet.

*camadeva nicevillei*, Rob. Assam. NR.

γ. Paler. Upf golden yellow costa and small chevrons. Below transverse lines straighter.

*camadeva nagaensis*, Roth. Naga Hills. VR.

δ. Pale. Uph pale terminal area much wider and sub-marginal band narrower.

*camadeva camadevoides*, DeN. N. Burma. R.

3a (2). Uph a postdiscal series of conspicuous black spots adjoining the dark sub-marginal line on the inside.

3b (5) Uph no conspicuous series pale discal spots inside the postdiscal row.

3 (4). On uph seen by transparency the postdiscal marking in 2 covers the ocellus below. Unh the postdiscal line is midway between the ocelli and the termen or nearer the latter and the more or less well defined submarginal dark band is midway between the postdiscal line and the termen.

a. Uph postdiscal spots diamond-shaped and narrowly joined to the submarginal band. Above tawny, apex F pale yellow.

\**sparta tytleri*, Roth. (125-150). The Manipur Jungle Queen. Manipur, Abor and Naga Hills, Kindat and Katha, N. Burma. NR. (= *wilhelma*, Rob.).



**E4. Sticophthalma.—The Junglequeens. (Plate 15)—contd.**

β. Upf postdiscal spots shield-shaped and broadly joined to the submarginal band. Above tawny, apex F paler.

*sparta sparta*, DeN. Htawgaw, NE. Burma. VR.

γ. Upf apical area paler: uph markings not so broad. Below darker, less uniform, submarginal line nearer margin.

*sparta evansii*, Tyt. Sadon, NE. Burma. NR.

δ. Upf apical area whiter and more extensive: uph margin paler, fulvous area darker.

*sparta archbaldi*, Tyt. Gokteik, N. Shan States. R.

4 (3). On uph seen by transparency the postdiscal marking in 2 is well clear of the ocellus below. Unh the postdiscal line is generally nearer the ocelli: there is no submarginal dark band, but the submarginal markings from above show through from above faintly and their inner edge is nearer the postdiscal line than the termen. Up marginal markings as in *tytleri*, but narrower. Above rather pale tawny, apex F and margin H white, tinged lilacine.

a. Darkest form. Up tawny colour extends over the sagittate spots.

*louisa fruhstorferi*, Rüb. (125-150). The Burmese Jungle Queen. N. Shan States. R.

β. Generally paler. Up tawny colour does not reach the sagittate spots.

*louisa antonia*, Rüb. Karens. NR.

γ. Darker. Up tawny colour reaches the sagittate spots.

*louisa louisa*, WM. Taoo Plateau, Ataran, Dawnas and Haungthraw valley, Burma. NR.

5 (3b). Up conspicuous series diamond-shaped white spots inside the postdiscal band of conjoined spots, making three marginal pale bands. Up also with 3 rows of white spots, inner row ending in a large pale costal area. Ground colour above greenish steel blue, washed olive brown.

*godfreyi*, Roth. (125-140). Godfrey's Junglequeen. Dawnas—S. Burma. VR.

**E5. Thaumantis.—The Jungleglories. (Plate 16).**

1 (2). Above dark brown with a prominent iridescent blue discal band on each wing. Below uniform dull dark brown. ♂ tuft small, no brand.

\* *diores*, Db. (95-115). The Jungleglory. Sikkim—Burma. NR. (= *ramdeo*, Wd.).

2 (1). Above brilliant metallic blue to base, no discal band. Below base and margin paler. ♂ with tuft and brand.

*lucipor*, Wd. (100-110). The Dark Jungleglory. S. Burma. VR.

**E6. Thauria.—The Jungleking. (Plate 16).**

Above dark brown, pale discal band F; H costa narrowly and tornus broadly bright chestnut ochreous.

1 (2). ♂ uph no brand or tuft around cell. ♂ discal band yellowish and broad; ♀ band white and broader.

**E6. Thauria.—The Jungleking. (Plate 16)—contd.**

\* *lathyi amplifascia*, Roth. (110-120). The Jungleking. Manipur—S. Burma. R.

2 (1). ♂ uph with large band and tufts about cell.

a. Upf band wide.

*aliris intermedia*, Crow. (110-120). The Tufted jungleking. N. Burma. VR.

β. Upf band narrow.

*aliris pseudaliris*, But. Karen Hills—S. Burma. VR.

**E7. Amathusia.—The Palmking. (Plate 16).**

a. Above dark brown, yellow pre-apical band on F and sub-terminal band H in ♂. Below dark and all markings prominent; H only 2 ocelli.

\* *phidippus friderici*, Fruh. (100-125). The Palmking. S. India. Bassein, Karens—S. Burma. R.

β. Above yellow markings replaced by paler markings of the ground colour.

*phidippus binghami*, Fruh. S. Mergui. R.

γ. ♂ above ferruginous brown, unmarked. Below paler and markings fainter; H 3 or 4 ocelli. ♀ yellow banded.

*phidippus andamanica*, Fruh. Andamans. R.

**E8. Amathuxidia.—The Kohinoor. (Plate 16).**

Above dark brown, upf broad band, pale blue in ♂, yellow in ♀: uph unmarked. Below pinkish lavender with dark lines prominent and 2 ocelli H.

\* *amythaon*, Db. (110-130). The Kohinoor. Sikkim—Burma. R. (= *portheus*, Fd: *westwoodi*, But.).

**E9. Zeuxidia.—The Saturns. (Plate 16).**

1a (3). ♂ uph with prominent blue border.

1 (2). ♂ uph blue border not above v4 and widening to tornus. Upf blue band narrowing to tornus. ♀ upf white discal band and white spots becoming yellow outwardly; uph terminal area rather obscure yellow.

\* *amethytus masoni*, M. (110-120). The Saturn. Karen Hills—S. Burma. R.

2 (1). ♂ uph blue border continued to costa and narrowing to tornus. ♀ upf marked as in last, but all markings violaceous.

*doubledayi chersonesia*, Fruh. (110-120). The Scarce Saturn. Dawnas—S. Burma. VR.

3 (1a). ♂ uph no blue border; upf blue area extending along cell and costa nearly to base. ♀ spots pure white and apex H white. ♂ unf prominent white band in 1b near base; uph dark blue area cell to tornus and shining area in cell.

*aurelius*. Cr. (140-160). The Great Saturn. Mergui. VR.

## \*E10. Discophora.—The Duffers. (Plate 16).

1a (3a). ♂ uph brand in 3 large, not pale edged and so not conspicuous, nearly reaches v5.

1(2). ♂ ♀ with black or yellow spots, no discal continuous band.

a. ♂ upf all 3 rows black spots equally prominent; H no spots.  
*tullia muscina*, Stch. (80-90). The Common Duffer. N. Kanara, VR.

β. ♂ upf rows of spots not equally prominent. ♂ ♀ upf spots bluish white and ♀ with a yellow patch end cell, enclosing a black spot; ♂ uph with spots.

\* *tullia zal*, Wd. (80-90). Sikkim—Burma. C. (= *despoliata*, Stch.).

v. *indica*, Stg. ♂ uph no spots. ♀ yellow patch end cell absent. NR.

v. *spiloptera*, DeN. ♂ upf yellow spots. ♀ yellow patch end cell not enclosing black spot. R.

2 (1). ♂ ♀ upf with broad yellow discal band.

*deo*, DeN. (90). The Banded Duffer. Manipur—N. Burma. VR.

3a (1a). Uph brand in 3 small, pale edged and very prominent, not nearly to v5.

3 (4). ♂ upf with bluish white spots and ♀ with a bluish white band and spots and uph yellow spots.

a. ♂ upf bluish white spots obscure. ♀ lower part of discal band more broken up into spots.

*lepida ceylonica*, Fruh. (85-95). The Southern Duffer. Ceylon. R.

β. ♂ apical bluish white spots prominent and conjoined.

\* *lepida lepida*, M. S. India. R. (= *significans*, Stch.).

4 (3). ♂ upf with yellow spots. ♀ upf with yellow discal band and spots and uph with yellow spots.

a. ♂ upf yellow spots more or less prominent.

*continentalis continentalis*, Stg. (85-100). The Great Duffer. Bengal. Sikkim—Burma. NR. (= *celinde*, Auct: *semineclis*, Stch.).

β. ♂ yellow markings upf obscure except for an elongated spot near base 6. ♀ termen yellow edged.

*continentalis andamanensis* Stg. Andamans. R.

## E11. Enispe.—The Caliphs. (Plate 16).

1 (2). Above dark brown with bluish white spots and band upf; uph obscure yellow spots in ♂, prominent in ♀.

a. Upf band narrower and becoming macular posteriorly. ♂ uph yellow spots fairly prominent.

*cycnus verbanus*, Fruh. (80-95). The Blue Caliph. Bhutan. Cachar. R.

β. Upf band broader. ♂ uph yellow spots absent.

\* *cycnus cycnus*, Wd. Assam—N. Burma. R.

2 (1). Above brick red with black bands and spots.

*euthymius*, Db. (85-95). The Red Caliph. Sikkim—Burma. NR. (= *intermedia*, Roth: *melæna*, Tyl: *silhetensis*, Stg.).

\* v. *tessellata*, M. Above dark markings broader; upf black line in continuation of black markings defining end cell. NR.

## F. NYMPHALIDÆ

## F. Nymphalidæ.—The Nymphalids. Key to Genera.

- 1a (51a). Hindwing channelled to receive abdomen.  
 1b (48a). F v12 not swollen.  
 1c (18a). Larva, where known, smooth and the head with horns. Palpi with no long projecting hairs.  
 1d (4a). F v8 from before the middle of v7. Eyes smooth. Palpi smooth and white. Antennæ longer than half costa, club gradual. F cell closed and upper apex right angled. Body stout.  
 1e (3). F costa serrate. H pre-costal as a spur forward. Larva with 4 horns on the head.  
 1 (2). H cell closed.  
*Charaxes*, *Ochs*. The Rajahs. (Plate 17). (= *Haridra*, M.).  
 2 (1). H cell open.  
*Eribœa*, *Hüb*. The Nawabs. (Plate 17). (= *Eulepis*, *Dal* : *Murwareda*, M.).  
 3 (1e). F costa smooth. H precostal curved back.  
*Prothœa*, *Hüb*. The Begums. (Plate 17). (= *Agatasa*, M.).  
 4a (1d). F v8 never from before the middle of v7.  
 4b (14a). F upper end of cell opposite well before the origin v3.  
 4c (9a). Palpi white or brown throughout. Antennæ longer than half costa.  
 4 (5a). F upper end of cell obtuse; v10 ex 7; cell open. Eyes smooth. Antennæ club sharply spatulate.  
*Helcyra*, *Fd*. The White Emperor. (Plate 17).  
 5a (4). F upper end of cell right angled or acute; v10 ex cell. Antennæ club stout, gradual.  
 5 (6a). Cells closed. Eyes hairy. F v9 from well beyond end cell. H pre-costal forked. Forelegs hairy.  
*Dilipa*, M. The Golden Emperor. (Plate 18).  
 6a (5). Cells open.  
 6 (7a). F v3 much shorter than the mv. Genitalia of ♂ protruding. Eyes hairy.  
*Eulaceura*, M. The Elegant Emperors. (Plate 18).  
 7a (6). F v3 nearly equal to the mv. ♂ genitalia not protruding.  
 7 (8). F origin v8 nearer termen than origin v9. Eyes smooth or hairy. Larva with 2 horns.  
*Apatura*, F. The Emperors. (Plate 18). (= *Potamis*, *Hüb* : *Chitoria*, *Rohana*, *Dravira*, *Mimathyma*, *Narsenga*, M.).  
 8 (7). F origin v8 nearer origin v9 than termen. Eyes smooth.  
*Herona*, *Db*. The Pasha. (Plate 18).  
 9a (4c). Palpi black or black and white. Antennæ equal to half the costa. Cells open. H pre-costal mostly straight.  
 9b (12a). F v10 ex 7. Larva with 2 horns.  
 9 (10a). Palpi very long, black with a white tip.  
*Sephisa*, M. The Courtiers. (Plate 18). (= *Castalia*, M.).  
 10a (9). Palpi short, only white at base.  
 10 (11). Eyes smooth.  
*Euripus*, *Wd*. The Courtesans. (Plate 18).

**F. Nymphalidæ.—The Nymphalids. Key to Genera—contd.**

- 11 (10). Eyes hairy.  
*Diagora*, Snell. The Sirens. (Plate 18). (= *Parhestina*, M.).
- 12a (9b). F v10 ex cell. Eyes smooth. Palpi mostly black.
- 12 (13). F end v 12 long before origin of v9.  
*Hestina*, Wd. The Circe. (Plate 18).
- 13 (12). F v12 ends after the origin of v9.  
*Sasakia*, M. The Empress. (Plate 18).
- 14a (4b). F upper end cell opposite origin of v3 or beyond. Cells closed. Antennæ and palpi black.
- 14b (16a). F upper end of cell right angled. H precostal straight or curved back.
- 14 (15). F lower dcu straight. Antennæ equal to one-third costa. Eyes hairy. H v8 ends before apex.  
*Calinaga*, M. The Freaks. (Plate 21).
- 15 (14). F lower dcu highly curved. Antennæ equal to half the costa. Eyes smooth. H v8 ends at apex as usual.  
*Penthema*, Wd. The Kaisers. (Plate 21). (= *Isodema*, Fd.).
- 16a (14b). F upper apex of cell acute. Eyes hairy.
- 16 (17). H pre-costal straight. Antennæ longer than half costa.  
*Dichorragia*, But. The Constable. (Plate 19).
- 17 (16). H precostal curved forward. Antennæ shorter than half costa.  
*Stibochiona*, But. The Popinjay. (Plate 19).
- 18a (1c). Larva not smooth.
- 18b (30a). Larva with tubercles, never with more than a few rows of spiny processes. Palpi and antennæ never black.
- 18c (20a). Larva on either side with a complete row of very long horizontal pinnate processes. Eyes and palpi smooth. F upper end cell opposite beyond the origin of v3, right angled or acute. Pre-costal well curved forward and arises from well before the origin of v8. F origin v11 from far before the end of the cell, opposite origin v2. Antennæ longer than half costa, club gradual.
- 18 (19). F cell, if closed, lower dcu ends at origin v3.  
*Euthalia*, Hüb. The Barons, Counts, etc. (Plates 19-20). (= *Aconthea*, Hors. : *Symphædra*, Hüb. : *Tanæcia*, But. : *Itanus*, Db. : *Cynitia*, Snell. : *Felderia*, Semp. : *Nora*, DeN. : *Bassarona*, Chucapa, *Dophla*, Haramba, *Kirontisa*, *Labranga*, *Limbusa*, *Mahaldia*, *Rangasa*, *Saparona*, *Sonepisa*, *Tasinga*, *Zalapia*, M.).
- 19 (18). F cell closed and lower dcu ends well beyond origin v3.  
*Adolias*, Hüb. The Archdukes. (Plate 20).
- 20a (18c). Larva without long horizontal pinnate spines.
- 20b (27a). Larva without long horns on the head.
- 20c (22a). H precostal from beyond origin v8. Eyes smooth. Cells closed. F upper apex cell acute and far beyond opposite

F. Nymphalidæ.—The Nymphalids. Key to Genera—*contd.*

22a (20c). H pre-costal rises from origin v8. Antennæ club slender.

22b (26). H v8 reaches apex. Palpi smooth. H pre-costal curved forward.

22 (23a). F v1 highly sinuous, vs 9 and 10 distorted. Cells closed. Eyes smooth. Antennæ equal to half costa.

*Neurosigma*, *But.* The Panther. (Plate 21).

23a (22). F v1 straight.

23 (24a). F lower dcu highly concave. H cell open or shut; F shut. Eyes smooth. Antennæ equal to half costa.

*Abrota*, *M.* The Sergeant-major. (Plate 21).

24a (23). F lower dcu nearly straight. Antennæ equal to or longer than half costa. Eyes smooth or hairy. Cells open or shut.

24 (25). F upper end cell opposite origin v3 or beyond.

*Liminitis*, *F.* The Admirals, etc. (Plates 21-22). (= *Najas*, *Hüb.*: *Auzakia*, *Bhagadatta*, *Chalinga*, *Modusa*, *Parasarpa*, *Sumalia*, *M.*).

25 (24). F upper end cell before opposite origin v3.

*Pantoporia*, *Hüb.* The Sergeant. (Plate 22). (= *Athyma*, *Wd.*: *Chendrana*, *Condochates*, *Kironga*, *Parathyma*, *Tacola*, *Tacoræa*, *Tatisia*, *Tharasia*, *M.*).

26 (22b). H v8 not to apex. Cells open. Eyes smooth. Palpi hairy. F upper end cell opposite far beyond origin v3; v10 ex cell or 7. H pre-costal straight.

*Neptis*, *F.* The Sailors and Lascars. (Plate 22). (= *Andrapana*, *Bimbisara*, *Lasippa*, *Pandassana*, *Rahinda*, *Stabrobates*, *M.*).

27a (20b). Larva with very long horns on the head and very few processes on the body. Cells shut. Eyes smooth. H pre-costal from beyond origin v8. Palpi smooth. Antennæ equal to half costa, club slender.

27b (29). F v9 not to apex. Palpi very long.

27 (28). F v10 ex cell; vs 10 and 11 free.

*Cyrestis*, *Bdv.* The Maps. (Plate 23). (= *Marpeſia*, *Hüb.*: *Apsithra*, *M.*: *Sykophages*, *Mart.*).

28 (27). F v10 ex 7; vs 10 and 11 anastomosed.

*Chersonesia*, *Dist.* The Maplets. (Plate 23).

29 (27b). F v9 to apex; v10 ex cell. Palpi comparatively short.

*Pseudergolis*, *Fd.* The Tabby. (Plate 23).

30a (18b). Larva spiny with many rows of spines (or knobs in *Melitæa*). F upper end cell opposite origin v3.

30b (35a). Palpi smooth and abnormally long. Eyes smooth. Larva with 2 stout branched horns on the head. Antennæ equal to half the costa, club gradual.

30 (31a. 33a). H not tailed. F apex produced, termen rounded, but apex broadly truncate and termen concave just below.

*Hypolimnas*, *Hüb.* The Eggflies. (Plate 23).

31a (30. 33a). H shortly tailed at v4 and lobed at v1. F apex sharply truncate and falcate.

31 (32). Cells closed.

*Yoma*, *Doh.* The Lurcher (Plate 23).

32 (31). Cells open. F termen highly concave in middle and convex between vs 1 and 2.



F. Nymphalidæ.—The Nymphalids. Key to Genera—*contd.*

*Rhinopalpa*, Fd. The Wizard. (Plate 23).

33a (30. 31a). H long tail at v1 only.

33 (34). Cells open. F upper apex of cell right angled (acute in rest of group). F apex broadly truncate and concave below; convex above tornus.

*Doleschallia*, Fd. The Autumn Leaf (Plate 23.)

34 (33). Cells closed. F apex sharp pointed, termen highly convex opposite v2.

*Kallima*, Bdv. The Oakleaves. (Plate 23).

35a (30b). Palpi not abnormally long and usually more or less hairy.

35b (47). Claws normal and with appendages.

35c (41a). F lower dcu, if present, ends well beyond origin v3. Larva with no horns on the head.

35d (37a). F ends vs 6, 7, 8, 9 in a straight line.

35 (36). Eyes smooth. Palpi smooth. Cells open. Antennæ equal to half costa, club gradual or sharply spatulate.

*Precis*, Hüb. The Pansies. (Plate 24). (= *Junonia*, Hüb.).

36 (35). Eyes hairy. Palpi more or less hairy. Cells closed. Antennæ longer than half costa, club, gradual, stout.

*Vanessa*, F. The Tortoise Shells, etc. (Plate 24). (= *Pyrameis*, *Eugonia*, Hüb. : *Aglais*, Dal. : *Euvanessa*, Scud. : *Grapta*, Kir. : *Polygonia*, Kaniska, M.).

37a (35d). F ends vs 6, 7, 8, 9 not in line, 9 well back.

37b (39a). Eyes hairy. Antennæ equal to half costa, club stout, gradual. Cell F closed, H open.

37 (38). Palpi hairy.

*Araschnia*, Hüb. The Mongol. (Plate 24).

38 (37). Palpi smooth.

*Symbrenthia*, Hüb. The Jesters. (Plate 24).

39a (37b). Eyes smooth. Antennæ equal to or longer than costa, club abruptly spatulate. Palpi hairy.

39 (40). H cell closed. F upper end cell acute or right angled, opposite beyond origin v3; v10 ex 7 or cell. Larva spiny.

*Argynnis*, F. The Fritillaries. (Plate 24). (= *Acidalia*, *Brenthis*, *Dryas*, Hüb. : *Boloria*, *Rathora*, M. ; *Eudryas*, Reuss.).

40 (39). H cell open. F upper end cell right angled or obtuse, opposite origin v3; v10 ex 7. Larva with humps.

*Melitæa*, F. The Small Fritillaries. (Plate 24). (= *Cinclidia*, *Lemonias*, Hüb. : *Melicta*, Bill.).

41a (35c). F lower dcu ends before, at or only just beyond the origin of v3.

41b (46). Eyes smooth. Palpi with long fine hairs at the sides.

41c (44a). F v10 ex 7, v9 ends on costa and v8 behind a line joining the ends of vs 6 and 7. Larva head hornless.

41 (42a). H cell open. F origin v10 well beyond origin v7, v8 very short. Antennæ equal to half costa, club absent.

*Cupha*, Hüb. The Rustic. (Plate 25).

42a (41). H cell closed. F origin v10 just beyond origin v7. Antennæ equal to half costa, club moderate.

42 (43). H no spur from the angle of v4.

*Atella*, Db. The Leopards (Plate 25).

**F. Nymphalidæ.—The Nymphalids. Key to Genera—contd.**

43 (42). H with a spur from the angle of v4 towards v5.

*Issoria*, Hüb. The Vagrant. (Plate 25).

44a (41c). F v10 ex cell, v9 ends on apex behind a line joining the ends of vs 6, 7, 8. H with a spur or fold from the angle of v4 towards v5. H cell open. Larva with or without horns.

44 (45). F lower dcu ends at or just beyond the origin of v3. Antennæ longer than half the costa, club gradual.

*Cynthia*, F. The Cruiser. (Plate 25).

45 (44). F lower dcu ends before the origin of v3. Antennæ equal to half the costa, slender and clubless.

*Cirrochroa*, Db. The Yeomen. (Plate 25). (= *Ducafa*, M.)

46 (41b). Eyes hairy. Palpi smooth. H with fold in the wing from the angle of v4 towards v5. Cells closed. F v10 ex cell; v9 ends at apex behind the line joining the ends of 6, 7, 8. Antennæ equal to half the costa, club gradual.

*Terinos*, Bdv. The Assyrian. (Plate 25).

47 (35b). Claws very long and without appendages. Eyes smooth. Palpi white with long thin black hairs. Antennæ equal to half the costa, no club. Cells closed. F v10 ex 7, from well beyond end cell. Larva with 2 fine horns.

*Cethosia*, F. The Lacewings. (Plate 25).

48a (1b). F v1 swollen. Larva spiny with 2 thin horns on the head. Eyes smooth. Palpi slender, smooth. Antennæ equal to half the costa. Cells closed.

48b (50). Posterior tibiæ and tarsi with rows of spines.

48 (49). Antennæ club sharply spatulate. Apex F not truncate.

*Byblia*, Hüb. The Joker. (Plate 25).

49 (48). Antennæ slender clubless. Apex F truncate.

*Ergolis*, Bdv. The Castors. (Plate 25).

50 (48b). Posterior tibiæ and tarsi without rows of spines. Antennæ slender and clubless. Apex F truncate.

*Laringa*, M. The Dandies. (Plate 25). (= *Eurytela*, Auct.).

51a (1a). Hindwings not channelled to receive the abdomen. Antennæ hardly as long as half the costa. Palpi sparsely hairy. Eyes smooth. Wings sparsely scaled.

51 (52). Antennæ club gradual. H v7 ex 6.

*Pareba*, Db. The Yellow Coster. (Plate 25). (= *Acræa*, Auct.).

52 (51). Antennæ club short, abrupt. H v7 ex cell.

*Telchinia*, Hüb. The Tawny Coster. (Plate 25).

**KEY TO SPECIES****F1. Charaxes.—The Rajahs. (Plate 17).**

1a (7). Above tawny or chestnut. ♂ more or less toothed and ♀ tailed at v4.

Polyxena Group.

1 (2a). Uph margin broadly pale greenish white, bearing a central series of black rings. Bases chestnut brown, outer half of F dark brown, bearing 2 rows of crescentic white markings.

α. Paler and uph pale margin very broad.

•F1. *Charaxes*.—The Rajahs. (Plate 17)—*contd.*

*durnfordi nicholi*, GrS. (95-115). The Chestnut Rajah. Assam—Dawnas. VR.

β. Darker. Uph pale margin narrow.

*durnfordi merguia*, Tyt. Tavoy—S. Burma. VR.

2a (1). Uph margin not broadly pale.

2b (6). Unf costa not silver white at base.

2 (3a). ♂ upf border broad black, never with tawny spots at the apex; ♀ with broad white discal band. Below purple tawny.

a. Upf black border immaculate, border broad, equal to one-third of the wing at the dorsum; ♂ never with pale discal band, basal area uniform tawny with only a black bar at end cell. ♀ white discal band immaculate, reaches costa. ♂ with a tail at v4 H.

*polyxena psaphon*, Wd. (90-112). The Tawny Rajah. Ceylon. R. (= *serendiba*, M.).

β. As last, black border narrower. In DSF ♂ some tawny markings appear on the border upf towards tornus.

\* *polyxena imna*, But. (90-100). S. India—Orissa. NR.

γ. ♂ upf black border with tawny markings from dorsum to v2 or 3; uniform tawny with a black discal line and bar at end cell. ♀ discal band yellowish white and on inner side of border there are some pale tawny spots inwardly bordered by a lunular line; pale discal band not quite to costa and always with 2 black spots in middle in 5 and 6. ♂ only toothed H.

*polyxena hemana*, But. (85-100). Mussoorie—Kumaon R. (= *bernardus*, Koll.).

δ. As last, but very variable; ♂ with several well marked varieties. ♀ discal band white and pale spots on the border mostly white. Typical ♂ with no pale band upf and uph white dots in centre of black spots along border.

*polyxena hierax*, Fd. (80-100). Sikkim—N. Burma. C. (= *watti*, But. : *rossi*, Fr.).

♂ v. *corax*, Fd. No pale band : white spots uph on inner edge of the black spots. (= *harpax*, Fd.).

♂ v. *hindia*, But. Upf pale discal band; base fulvous and margin spotted.

♂ v. *hipponax*, Fd. Upf pale band; base fulvous to dark, margin not spotted (= *jalinder*, But.).

♂ v. *pleistoanax*, Fd. Upf pale band; base dark, margin white spotted and uph with the white discal band from F continued to v3 or 4 (= *khasianus*, *khimalara*, But. : *naganum*, Tyt.).

η. ♂ upf with no pale discal band; discal line usually absent; very like *corax*. Below darker and more variegated.

\* *polyxena agna*, M. (80-100). Karens—S. Burma. NR. Straggler on Andamans.

3a (2). ♂ upf black border narrow, bearing tawny spots reaching to the apex and inwardly bordered by a lunular dark line. ♀ never with a pale discal band.

3 (4a). Upf apical spots not above v6. Below purple tawny. *aristogiton*, Fd. (70-95). The scarce Tawny Rajah. Sikkim—Burma. R. (= *adamsoni*, *desa*, M.).

4a (3). Upf tawny apical spots into 6. Below ochreous.

F1. *Charaxes*.—The Rajahs. (Plate 17)—*contd.*

4 (5). Below more or less uniform and markings regular; unf black bar mid cell macular; unh dark discal line beyond cell more or less straight, except just beyond end cell. In WSF central band darker.

*marmax*, Wd. (90-120). The Yellow Rajah. Kumaon—Burma. R. (= *lunuwara*, But.).

5 (4). Below markings prominent and irregular, central band much darker. Unf all cell-bars entire; unh dark discal line very irregular and broken, highly concave in 6.

*kahruba*, M. (90-120.) The Variegated Rajah. Kumaon—Burma R.

6 (2b). Unf with a silver white bar at the base of the costa. Above much as No. 3. Below tawny.

*distanti*, Hon. (90-120). The Silver-edged Rajah. Karens—S. Burma. VR.

7 (1a). Above dark brown with a yellow or whitish discal band. H long equal tails at vs 2 and 4.

*Fabius* Group.

a. Above pale band narrow and dark yellow.

*fabius cerynthus*, Fruh. (70-80). The Black Rajah. Ceylon. NR.

β. Above pale discal band white, dark in WSF, pale in DSF. \* *fabius fabius*, F. S. India—Kangra—Sikkim. NR.

γ. Above pale discal band wide and sulphur yellow; H spotting on termen wider.

*fabius sulphureus*, Roth. Assam—Burma. R. (= *raidhaka*, Rhé Phil.)

F2. *Eribœa*.—The Nawabs. (Plate 17).

1a (4a). Above dark brown with a broad pale discal band, which does not reach the dorsum H. Uph termen with small white spots on the outer edge of the broad dark border.

1 (2a). Unh dark basal band passes through the outer half of the cell. Above discal band white, broadly blue edged.

a. Upf discal band continued evenly to v5, with 2 adjacent spots beyond in 5 and 6.

\* *schreiberi wardi*, M. (90-100). The Blue Nawab. S. India. VR.

β. Upf discal band tapers at the upper end and just reaches 4; white spot in 5 much nearer apex and with an apical dot in 6.

*schreiberi assamensis*, Roth. Assam—N. Burma. VR.

γ. Upf as last, but discal band not into 4, detached spot in 5 very small and spot in 6 absent.

*schreiberi tisamenus*, Fruh. Karens—S. Burma. Andamans. VR.

2a (1). Unh dark basal band passes through inner half of cell. Above discal band not blue edged.

2(3). Above discal band pale yellow, width varies greatly with the season; races only very slightly differentiated.

a. Small, band broad.

## F2. Eribœa.—The Nawabs. (Plate 17)—contd.

*athamās madeus*, Roth. (60-75). The Common Nawab. Ceylon. C.

β. Larger, usually 2 pale sub-apical spots upf.

*athamās agrarius* Swin. S. India. C.

γ. Large and very variable.

\* *athamās athamas*, Dr. Kulu—N. Burma. C. (= *bharata*, Fd.: *hamasta*, M.).

δ. Smaller and darker.

*athamās samatha*, M. Karens—S. Burma. C.

η. Much larger and very dark.

*athamās andamanicus*, Fruh. Andamans. R.

3 (2). Above discal band pale greenish white. Three seasonal forms as in last and width band varies very considerably with the season.

*arja*, Fd. (75-85). The Pallid Nawab. Sikkim—Burma. NR. (= *vernus*, Roth: *roeberti*, Fruh.).

4a (1a). Above pale yellow or greenish yellow, base H never dark; F with broad black apex.

4b (11). Unh dark discal band through basal half of cell meeting post-discal band at tornus.

4c (7a). Unf curved dark band from base through end cell to sub-marginal lunular band. Upf single pale spot on black apex.

4 (5a). Upf black margin not decreasing towards tornus.

*moori sandakanus*, Fruh. (80-85). The Malayan Nawab. Sikkim—Burma. VR. (= *marginalis*, Roth.).

5a (4). Uph black margin decreasing markedly in width towards tornus.

5 (6). Unh pale area covers more than half wing.

*jalysus ephebus*, Fruh. (75-85). The Yellow Nawab. Karens—S. Burma. R.

6 (5). Unh pale area covers less than half wing.

*hebe chersonesus*, Fruh. (75-85). Mergui—Victoria Point. VR.

7a (4c). Unf broad bar end cell extending to base v2; sub-marginal band continuous, not lunular, and nearer cell.

7b (9a). Unf costa dark chocolate brown; upf single row pale spots on margin.

7 (8). Upf and Unf no broad bar from end cell towards discal band. Uph sub-marginal dark band bearing pale spots along the outer edge and bluish lunules along the inner edge.

a. Smaller and paler.

*dolon dolon*, Wd. (80-90). The Stately Nawab. Kulu—Kumaon. R.

β. Upf pale spots smaller and shorter.

*dolon centralis*, Roth. (85-95). Nepal, Sikkim, Bhutan. R.

γ. Upf spots larger than in a. Uph sub-marginal band narrow and blue lunules small.

\* *dolon magniplaga*, Fruh. (95-105). Assam—N. Burma. R.

δ. Uph more deeply scalloped and uph blue sub-marginal lunules more prominent.

*dolon grandis*, Roth. (95-110). Shan States—Dawnas. R.

8 (7). Upf and unf broad dark bar from lower end cell along 3 to the discal band, enclosing a large pale spot beyond end cell;

F2. *Eribœa*.—The Nawabs. (Plate 17)—*contd.*

spots on margin increase in size to tornus. Uph with a post discal dark band.

a. Larger. Usually a postdiscal pale spot in 7 upf. Uph sub-terminal narrow dark bars in spaces up to 6.

\* *narcœa aborica*, Evans. (70-75). The China Nawab. Abor Valley. R.

β. Smaller. Upf no spot in 7. Uph sub-terminal dark bars obsolete above 3.

*narcœa lissainei*, Tyt. (70-75). Naga Hills. N. Burma. R.

9a (7b). Unf costa white and upf with sub-marginal as well as postdiscal row spots. Uph band as in No. 7. Up and unf bar from lower end cell towards discal band as in No. 8, but much shorter.

9 (10). Upf 2 pale spots end cell; dark margin becoming obsolete at tornus.

*nepenthes*, GrS. (80). The Shan Nawab. Shan States. VR.

10 (9). Upf single pale spot end cell and 2 spots beyond.

a. Large. Seasonal forms differ much in size and size of spots.

*eudamippus eudamippus*, Db. (100-120). The Great Nawab. Kumaon—Assam. NR.

β. Upf cell all black or very nearly so.

\* *eudamippus nigrobasalis*, Lathy. N. Burma. NR.

γ. As a but smaller. Uph no blue border to band and outer white spots larger.

*eudamippus jamblichus*, Fruh. Karens—S. Burma. R.

11 (4b). Below no dark bands; large spots end cells, base 2F and mid costa H; submarginal row reddish spots preceded by a blue line and on H followed by a greenish yellow line as well as a terminal blue and greenish yellow line. Above broad black apex bearing one or two pale spots and on H sub-terminal bluish, white centred, line.

\* *delphis*, Db. (95-100). The Jewelled Nawab. Assam—Burma. NR.

F3. *Prothœ*.—The Begums. (Plate 17).

1 (2). Above pale yellow, broad black apex and margins. Below variegated red and black. F lower dcu evenly curved.

\* *calydonia belisama*, Crow. (110-120). The Glorious Begum. Karens—S. Burma. VR.

2 (1). Above dark brown with a blue band F. Below variegated dark brown and whitish; H with broad greenish marginal lunules. F lower dcu highly concave at lower end.

a. Upf blue band very broad and not marked with white; complete series terminal blue spots, upper 2 being white.

*frankii regalis*, But. (70-80). The Blue Begum. Manipur, Upper Assam. VR.

β. Upf blue band narrow and centrally with white splashes; white marginal spots only in 5, 7 and 8.

\* *frankii angelica*, But. Karens—S. Burma. R. (= *uniformis*, But.).



**F4. Helcyra.—The White Emperor. (Plate 18).**

Above glazed white; upf black spots in cell and 1b, broad black apex with 2 white spots; uph with a few irregular black discal spots. Below only a thin discal line of black lunules.

\* *hemina*, Hew. (65-75). The White Emperor. Sikkim—Burma. R. (= *masinia*, Fr.).

**F5. Dilipa.—The Golden Emperor. (Plate 18).**

Above dark brown, ♂ with golden bronzy, ♀ with white, central and discal spots F and whole disc H; upf white apical dots.

\* *morgiana*, Wd. (70-80). The Golden Emperor. Kashmir—Shan States. R.

**F6. Eulaceura.—The Elegant Emperors. (Plate 18).**

1 (2). Above transparent pale brown, with dark brown costa F and large spot in 2 as well as margins and discal band H.

*manipuriensis*, Tyt. (75-80). Tytler's Emperor. Manipur. VR.

2 (1). Above dark brown with a continuous white discal band, extending on F from dorsum to 3. Below as in last, glazed pale violet brown with an ocellus in 2 F and H.

\* *osteria kumana*, Fruh. (65-70). The Elegant Emperor. S. Burma. R.

**F7. Apatura.—The Emperors. (Plate 18).**

1a (7a). Unf no row of minute sub-apical white dots in 5, 6 and 8

Iris Group.

1b (4a). Unf no black spots in cell.

1 (2a). Above tawny with black apical markings upf. Below as *sordida*.

*cooperi*, Tytler. (60-70). Cooper's Emperor. N. Shan States. R.

2a (1). Above dark brown or greenish brown.

2 (3). Upf single discal pale band, macular in ♂, continuous in ♀, in addition to the white apical spots. Above dark brown, no pale band H. Below ocellus in 2 F and H fulvous ringed; dark discal line white edged at upper end.

a. Upf discal band white. Uph ocellus in 2 prominent. Below pale brown.

*sordida sordida*, M. (60-70). The Sordid Emperor. Sikkim—N. Burma. R. (= *phæacia*, Hew.).

β. Upf discal band yellow tinted. Uph ocellus in 2 absent. Below pale greenish brown.

*sordida naga*, Tyt. Nagas. R.

β (2). Upf 2 pale discal bands in addition to the apical spots. Uph dark discal line pale edged throughout. Above dark greenish

F7. *Apatura*.—The Emperors. (Plate 18)—*contd.*

brown; ♂ upf markings tawny and inner band crosses cell, ♀ markings white or yellowish white, inner band not crossing cell.

a. Upf outer discal band continuous. Uph mostly tawny; unh complete row postdiscal ocelli.

*ulupi ulupi*, Doh. The Tawny Emperor. Upper Assam. VR.

β. Upf outer discal band broken at v4. Uph ♂ only tawny in 5 and 6; ♀ postdiscal spots well defined in 5 and 6. Below pale greenish white.

*ulupi florenciæ*, Tyt. Nagas. R. (= *albina*, Tyt. ♀ var.).

γ. Intermediate between the above 2 races.

*ulupi kalaurica*, Tyt. N and S Shan States. R.

4a (1b). Unf with black spots in cell.

4 (5a). Upf 2 discal bands; no sub-marginal spots F or H. Above dark brown and tawny, shot blue in ♂. Below pale tawny, prominent pale discal band unh, no sub-marginal dark band.

*ilia here*, Fd. (70-80). The Tawny Purple Emperor. Shan States. VR.

5a (4). Upf single white discal band in addition to the apical spots, nearly always sub-marginal pale spots H and often on F. Below bluish white, prominent ferruginous discal and terminal band E and H, which on H meet at apex and tornus.

5 (6). Upf no white streak in cell from base. ♂ above shot brilliant blue.

a. Very large. Blue gloss duller; white markings broad and diffused; upf discal band to v11. Unh ocellus in 2 absent. Uph sub-marginal white markings very large.

*ambica chitralensis*, Evans. (75-90). The Indian Purple Emperor. Chitral—Kashmir. NR.

β. Smaller and all markings more sharply defined. Variable and liable to aberrations.

\**ambica ambica*, Koll. (65-75). Kashmir—Dawna. NR. (= *sanoa* Herw.: *namouna*, Db.: *bhavana*, M.: *garlanda*, Fr.).

6 (5). Upf with white streak in cell from base, sub-marginal spots prominent. ♂ very obscurely blue shot. Uph with white discal band from mid costa to base 1c. Body prominently white banded. Very like a *Pantoporia*. (F. 25).

*chevana*, M. (75-80). The Sergeant Emperor. Sikkim—N. Burma. R.

7a (1a). Unf prominent small sub-apical white dots in 5, 6 and 8. F end cell opposite origin v3. Club antennæ narrow. Unf prominent spots in cell.

Parisatis Group.

7 (8). Above dark ochreous brown; uph with a straight yellow band; upf discal band of yellow spots, apical spots continued to 3 and a prominent black spot in 2. Eyes hairy.

*parvata*, M. (50-60). The Brown Prince. Sikkim—Assam. R.

8 (7). Above ♂ velvet black, unmarked except for white apical dots. ♀ ochreous brown with a paler discal band, which on H is always irregular.

a. ♂ upf with 3 apical dots.

*parisatis camiba*, M. (45-50). The Black Prince. Ceylon. NR.

F7. *Apatura*.—The Emperors. (Plate 18)—*contd.*

β. As last, rather larger. ♀ paler and with pale bands prominent.

*parisatis atacinus*, Fruh. S. India. NR.

γ. ♂ upf single apical dot. ♀ much darker.

\* *parisatis parisatis*, Wd. Kumaon—Burma. NR.

F8. *Herona*.—The Pasha. (Plate 8.)

Above dark brown with 2 yellow or white discal bands F and H and a basal streak in 1b F. Unf conspicuous white streak in outer half of 5 to termen.

Above bands tawny, very wide and confluent.

\* *marathus marathus*, Db. (70-90). The Pasha. Sikkim—Shan States. NR.

β. Above bands tawny and narrow; discal bands H and outer band F macular.

*marathus angustata*, M. Karens—S. Burma. R.

γ. As last but bands in ♂ whitish and in ♀ white.

*marathus andamana*, M. Andamans. R. (= *seneca*, Stg.).

F9. *Sephisa*.—The Courtiers. (Plate 18).

1 (2). Above dark brown with 2 tawny bands F; H tawny with black veins and a dark postdiscal band. In ♀ upf the apical spots are whitish.

*dichroa*, Koll. (60-75). The Western Courtier. Chitral—Kumaon. NR.

2 (1). ♂ above outer discal band and apical and sub-marginal spots white; typical ♀ mostly blue; 2nd form ♀ spots as ♂, but all white except for a yellow spot in cell and on H the tawny colour is replaced by white; 3rd form ♀ as first but with white apex upf.

\* *chandra*, M. (75-90). The Eastern Courtier. Sikkim—Karens. NR. ♀ VR. (= *djalila*, vera, Fr.).

♀ *v. albina*, Evans. VR. (= *atiya*, Fr.).

♀ *v. chandrana*, Evans. R.

F10. *Euripus*.—The Courtesans. (Plate 18).

1 (2). Unh with red basal markings. ♂ H red sub-marginal spots in 1c to 3.

α. Darker. H vs broader black and black discal band continued in ♂ to costa, also traceable in ♀; F discal band narrow.

*consimilis meridionalis*, WM. (60-85). The Painted Courtesan S. India. R.

β. Pale markings broader. Uph black discal band only traceable in ♂. Unf dark discal band prominently broader at lower end.

*consimilis consimilis*, Wd. Dun—Dawnas. R. Straggler on Andamans. (= *hallirothius*, Wd.; *torsa*, RhéPhil; *amala*, *diocletiana*, *eurinus*, *gudila*, *sunta*, *triquilla*, Fr.).

**F10. Euripus.—The Courtesans. (Plate 18)—contd.**

2 (1). Unh no red basal markings. ♂ black with pale spots as in No. 1. ♀ in several forms; typical form with a broad white band upf and uph all white except for a narrow sub-marginal brown band.

\**halitherses*, Db and Hew. (65-85). The Courtesan. Sikkim—Burma. NR. (= *gulussa*, *neda*, *pademmoides*, Fr.).

♀ *v. isa*, M. As typical form, outer half uph dark brown. NR. (= *haliartus*, Fd.).

\*♀ *v. nyctelius*, Db. Upf dark brown with apex broadly suffused bluish; uph all dark brown. NR. (= *gyrtona*, Fr.).

♀ *v. cinnamoneus*, WM. As last, but uph outwardly with white streaks. R.

♀ *v. alcathæoides*, DeN. As *nyctelius*, but upf all dark brown. VR.

**F11. Diagora.—The Sirens. (Plate 18).**

1 (2). Upf black bar mid cell; unh dorsum not yellow.

α. Paler, white markings wider.

*persimilis zella*, But. (65-75). The Siren. Simla—Kumaon. R.

β. Darker, white markings narrower. Apex F more produced.

\**persimilis persimilis*, Wd. Orissa. Sikkim—S. Shan States. R. (= *aporina*, Rüb.).

2 (1). Upf no black bar in cell. Unh dorsum yellowish. Development of black markings very variable.

*nicévillei*, M. (75). The Scarce Siren. Dalhousie—Mussoorie. VR. (= *jermyini*, Druce: *mena*, Auct.).

**F12. Hestina.—The Circe. (Plate 18).**

Upf with broad black veins and spotted borders. Uph veins and border broad bright chestnut.

\**nama*, Db. (95-105). The Circe. Mussoorie—Burma. NR.

**F13. Sasakia.—The Empress. (Plate 18).**

Above black, outer half with prominent pale streaks; upf narrow red basal streak in cell, which unf is much wider; unh some basal red markings below costa.

\**funnebris*, Leech. (125-130). The Empress. Nagas. VR.

**F14. Calinaga.—The Freaks. (Plate 21).**

α. Only fore part of thorax above orange. Unh dull ochreous.

*buddha buddha*, M. (90-105). The Freak. Murree—Kumaon. VR.

β. Darker. Unh pale brown. F more elongated.

*buddha gautama*, M. Sikkim. VR.

F14. *Calinaga*.—The Freaks. (Plate 21)—*contd.*

γ. Above all pale markings very reduced, sharply defined and clear, not diffused as usual.

*buddha aborica*, Tyt. Abor Valley. VR.

δ. All thorax above orange. Dark with the pale markings reduced. Unh pale slate.

*\*buddha brahma*, But. Assam—N. Burma. R.

η. All thorax orange above. Uph tornus broadly orange.

*buddha sudassana*, Melvill. Shan States—Karens. VR.

F15. *Penthema*.—The Kaisers. (Plate 21).

1 (2a). Uph dark brown with pale yellow spots; large basal streaks in 2 and 3. Uph cell all yellow; sub-marginal and discal spots small, preceded by streaks.

a. Below reddish brown. DSF with apex produced.

*\*lisarda lisarda*, Db. (123-135). The Yellow Kaiser. Sikkim—Manipur. R. (= *euphrone*, Wd.).

β. Below dull brown.

*lisarda mihintala*, Fruh. Chin Hills. R.

2a (1). Upf black with a blue sheen and all spots bluish; basal streaks in 2 and 3 replaced by spots; all markings smaller. Uph sub-marginal spots shaped like arrow-heads.

2 (3). Uph cell with yellow streaks followed by postcellular streaks, separate from discal spots. Upf long streak in 1b.

*darlisa*, M. (125-135). The Blue Kaiser. Shan States—S. Burma. R.

3 (2). Uph cell all black.

a. Upf long streak in 1b. Uph postcellular streaks conjoined to discal spots.

*binghami yoma*, Ellis. (125-135). The Black Kaiser. Pegu Yoma. VR.

β. Upf no streak in 1b. Uph no postcellular streaks.

*binghami binghami*, WM. Dawnas. VR.

γ. Upf no streak in 1b. Uph postcellular streaks conjoined to discal spots.

*binghami merguia* Evans. Mergui. VR.

F16. *Dichorragia*.—The Constable. (Plate 19).

Dark green with small whitish spots F and very prominent zigzag sub-marginal line single in ♂, double in ♀.

*\*nesimachus*, Bdv. (65-85). The Constable. Kulu—Burma. NR.

F17. *Stibochiona*.—The Popinjay. (Plate 19).

♂ above velvet black, ♀ dark green; upf white spotted and with a dull blue sub-marginal line; uph prominent row sub-marginal black spots, inwardly blue (♀ green) bordered and outwardly white.

F17. *Stibochiona*.—The Popinjay. (Plate 19)—*contd.*

a. Uph width of white edging narrower than width of black spots; wider in DSF.

*nicea nicea*, Gray. (60-80). The Popinjay. Kulu—N. Burma. NR. (= *viridicans*, Fr.).

β. Uph width of white edging twice as wide as the black spots.

\**nicea subucula*, Fruh. Karens—S. Burma. NR.

F18. *Euthalia*.—The Barons, Counts, etc. (Plates 19 and 20).

1a (28a). Unh base with 2 spectacle marks in cell, outer one extending to base 5, small ring base 6 and a larger one base 7; these markings variable and may be obscure or absent.

1b (18a). Unf cell entirely open.

1c (1a). H termen straight to just above v3, where it is angled, giving the wing a squared appearance. F vs 11 and 12 anastomosed, 11 and 10 touch 10 and 9; 9 from mid 7. F prominently falcate. Uph ♂ a black band at bases of 6 and 7.

Cocytus Group.

1d (3). Unf post discal line prominent and not parallel to termen, much nearer termen at apex than at tornus.

1 (2). Unf postdiscal line quite straight, ♂ uph with a very broad lavender grey margin extending to v5 F; upf large dark greenish spots in cell and beyond. ♀ pale brown; upf a prominent straight black band from termen at end of v7 to outer third of dorsum, continued on H behind end cell; upf apex greenish and with prominent elongated white spots in 5 and 6, smaller spot beyond in 6, minute spots in 3 and 4 and spot in 2. Below yellowish, margins, not paler.

\**cocytus, satrapaces*, Hew. (65-80). The Lavender Count. Manipur—S. Burma. NR.

2 (1). Unf postdiscal line sinuous. ♂ above nearly black with a pale blue border F and H; unf margin bluish; unh all dark brown. ♀ above pale brown; upf large dusky white spots in 2 and 3 and elongated spots in 5 and 6, all bordered pale dusky bluish.

*godarti asoka*, Fd. (70-80). The Malay Count. Mergui. VR.

3 (1d). Unf postdiscal line waved and parallel to termen. Sexes alike. Uph broad pale margin to v6 F. Below margins prominently paler.

a. Small; borders above very pale grey. Below clouded brown. *lepidea miyana*, Fruh. (65-75). The Grey Count. N. Kanara, Orissa. R.

β. Larger; borders above pale grey.

\**lepidea lepidea*, But. (70-80). Kumaon—Assam. NR. (= *adustata*, Fr.).

γ. Rather smaller; borders darker grey. Below more uniform, reddish brown. ♀ upf pale brown spots beyond cell.

*lepidea sthavara*, Fruh. (65-75). N. Burma—Dawnas and Tavoy NR.

δ. Borders above pale blue.

*lepidea andersoni*, M. (70-80). The Blue Count. Tavoy—S. Burma. NR.



F18. *Euthalia*.—The Barons, Counts, etc. (Plates 19 & 20)—*cont.*

4a (1c). H termen not angled at v3.

4 (5a). Palpi 3rd joint very long and needle like. Above rather pale brown with 2 dark, highly zigzag, discal lines filled in between with white on F. Unf outer half bluish white.

*Pelea* Group.

*pelea*, F. (70-80). The Malay Viscount. Mergui. VR.

5a (4). Palpi not long and needle like.

5b (8a). Palpi 3rd joint sharply attenuate. H termen evenly convex and wing symmetrical about a central axis from base to mid termen. Upf basal markings in 1 very wide and the ring under origin of v2 reaches v1. F venation as in last group, but origin v9 usually nearer base. Unh with black spots usually at bases 1c, 2 and 3.

*Julii* Group.

5 (6a). ♂ ♀ above with a broad white discal band F and H, outwardly bordered by conical black spots, which on H are surmounted by blue spots. Below pale green.

\* *cibaritis*, Hew. (75-85). The Andaman Viscount. Andamans. C. (= *vinaya*, Fr.).

6a (5). Above no continuous white band F and H; 2 dark bands parallel to one another and to the termen; these bands may be filled in between with pale colouring on F and on H may be obscured by a pale blue margin in the ♂.

6 (7). Above dark bands not conspicuously lunulated, composed more of diffuse spots.

a. ♂ uph blue margin uph to outer discal band and reaching v6. ♀ rather pale brown with whitish spots upf at the upper end of each discal band in 6. Unh ♂ tornal half green, ♀ all bluish except apex.

*julii appiades*, Men. (65-80). The Common Earl. Kumaon—Sikkim. C. (= *virescens*, Fr.).

β. Larger. ♂ uph blue margin absent or narrow and broken. ♀ very variable, portion between discal bands upf may be entirely filled in whitish or may be as in last.

\* *julii adima*, M. (70-85). Khasi Hills. C. (= *khasiana*, Swin.).

γ. Paler and blue border uph in ♂ broader. Upf dark bands closer and in ♀ often with pale brown large spots in cell and beyond. ♀ as variable as last but smaller.

*julii sedeva*, M. (65-80). Sylhet, Cachar. Manipur and N. Burma. NR. (= *balarama*, M.).

δ. As last, but blue border uph in ♂ still broader, reaches nearly to inner discal band. Above more uniform. ♀ as last, but dark bands H closer together. Unh ♂ and ♀ green or bluish over the whole wing or nearly so.

\* *julii xiphones*, But. (65-80). Karens—S. Burma. NR. (= *parvata*, M.).

7 (6). Above discal bands conspicuously lunulated. ♂ rich vinaceous brown, no blue border H. ♀ pale brown, paler between the dark discal bands, often whitish on F especially at upper end. Below ♂ yellowish brown; ♀ yellow, H more or less bluish.

a. Larger.

F18. *Euthalia*.—The Barons, Counts, etc. (Plates 19 & 20)—contd.

*jahnu jahnu*, M. (65-80). The Plain Earl. Sikkim—N. Burma. NR. (= *sananda*, M.).

β. Smaller and wings broader.

\* *jahnu jahmita*, Evans. (60-75). Karens—S. Burma. NR.

8a (5b). Palpi 3rd joint gradual. Upf basal markings never wide. Unh no or only traces of black spots at bases of 1c, 2 and 3. F vs never anastomosed in ♂ and only in ♀ of Nos. 8, 9 and 10.

Garuda Group.

8b (14a). Up or unf never with 2 detached apical white spots on either side of v7, just behind origin v8, unless forming part of the pale band in the ♀. Upf basal markings in 1b consist of a well defined ring under the origin of v2 reaching mid 1b (in Nos. 8 and 10 usually a small ring or dot below) as well as a dark dot at the extreme base.

8c (10a). Unf at base 1b always a ring or round spot under origin v2 with usually a 2nd below it.

8 (9). Apex F pointed; H tornus in ♂ produced and termen convex. ♂ dark brown with broad bluish grey margin uph and discal band upf, which is very wide at its lower end; a whitish spot base 3 upf. ♀ paler brown with the usual 2 dark discal lines, as in Nos. 6 and 7, area between much paler especially at upper end F; band pushed in at base 3 corresponding to the white spot in the ♂. Below yellow and dorsal area H greenish. ♂ uph a dark band of modified scales at bases 6 and 7.

α. ♂ small and pale; brown costal area more extensive; below band obscure especially in DSF. ♀ pale discal band less developed.

*kesava arhat*, Fruh. (50-80). The Powdered Baron. Sikkim. NR.

β. ♂ larger, darker greenish. ♀ whitish discal band more developed especially in WSF. Below darker.

\* *kesava kesava*, M. (55-80). Assam—N. Burma. NR.

γ. ♂ inner side of discal band sinuous. ♀ whitish discal band very prominent, broader and edges more sinuous.

\* *kesava discipilota*, M. (50-70). Bharno—S. Burma. NR. (= *rangoonensis*, Swin.).

9 (8). Apex F highly falcate and in ♂ tornus produced, termen being concave before tornus. Above ashy grey, more or less suffused greenish. ♀ with curved row small white spots beyond cell from 3 to costa.

α. Larger and more uniform. ♂ no white costal patch, but a prominent white spot base 3. ♀ upf spots rounded.

*anosia saitaphernes*, Fruh. (70-85). The Grey Baron. Sikkim. R.

β. ♂ Smaller, darker and more marmorated. ♂ upf with a white costal patch beyond cell, no spot base 3. ♀ upf spots pointed.

\* *anosia anosia*, M. (65-80). Assam—Burma. R.

10a (8c). Unf at base 1b no markings or only a single spot or dash under origin v2 and only very rarely a spot at the extreme base.

10 (11a). Upf cilia white at apex, which is produced, not pointed; H termen evenly convex, tornus not produced. ♂ above

F18. *Euthalia*.—The Barons, Counts, etc. (Plates 19 & 20)—*contd.*

very dark brown, with blue margin uph, extending to v3 F. ♀ above rather pale brown; inclined broad dark brown border from apex to two-thirds along dorsum, continued on H to just beyond cell; upf 5 dusky white spots in a curved row beyond cell.

\* *telchinia*, Men. (70-85). The Blue Baron. Coorg. VR. Sikkim—N. Burma. R. (= *aphidas*, Hew.).

11a (10). Upf cilia brown throughout. ♂ tornus H produced.

11b (13). Apex F sharply pointed and tornus gently concave from apex to v2.

11 (12). Above ♂ very dark brown, broad blue margin H to v6, which inwardly bears a row of black discal spots. Upf termen broadly paler beyond the discal band, which is wide and widens at lower end; inner discal band merged into basal dark area. Below ochreous brown, H dorsal area more or less green washed; the 2 parallel discal bands prominent, on F outer one widens to dorsum, inner one curved in at upper end; H inner band continuous, diffuse and pale, outer one consists of very small spots; apex unf whitish. ♀ unknown.

*mahadeva binghami*, DeN. (65-80). Bingham's Blue Baron. S. Burma. VR. (*zichri*, Auct.).

12 (11). Upf no blue border. Upf the 2 discal bands more or less separated throughout. ♂ above very dark brown, outer discal band connected in each space by a dark bar to the termen, inner band merged to dark basal area; H outer discal band prominent, inner merged to dark basal area. Below dark ochreous brown, bands as in No. 11 and apex F whitish; in DSF bands faint. ♀ paler, apex upf whitish, discal bands prominent, outer one lunular, but of small spots uph; upf row of white spots beyond cell small in WSF, large in DSF from 2 or 3 to costa, as in No. 10. Below pale ochreous brown, more or less washed greenish on H.

*merta eriphyle*, DeN. (60-70). The White-tipped Baron. Assam—S. Burma. R. (= *apicalis*, Auct.: *delmana*, Swin.: *pseuderiphyle*, Fr.).

13 (11b). F apex not sharp pointed, termen slightly concave in middle only. ♂ above dull dark ochreous brown, very uniform; outer discal band F and inner discal band H very faint. Below yellow, outwardly darker and dorsal area H paler; inner discal bands faint; outer discal band fairly prominent, especially at ends; on H outer discal band of small, obscure spots. ♀ unknown.

*kanda elicius*, DeN. (60-70). The Yellow Baron. S. Burma. VR.

14a (8b). Up or unf always 2 detached white apical spots on either side v7 just before origin v8. Upf basal markings in 1 consist of a spot, not a ring, under origin v2 and a dash at extreme base, both may be absent. Unf spot under origin v2 may be replaced by a ring. ♂ apex F pointed and tornus H produced.

**F18. Euthalia.—The Barons, Counts, etc. (Plates 19 & 20)—contd.**

a. ♂ very dark. ♀ upf with a straight white macular discal band from costa beyond cell to v2 near termen. Upf apical spots obscure.

*garuda vasanta*, M. (60-75). The Baron. Ceylon. C. (= *fulica*, Fr.).

β. Very large. ♂ basal area dark; discal spots small, or absent; discal area dusted whitish. ♀ discal spots large, pure white, discal area beyond prominently dusted whitish.

*garuda meridionalis*, Fruh. (65-80). S. India—N. Kanara. C. (= *diversa*, Evans).

γ. Small and pale. ♂ upf discal spots small, but those beyond end cell always present. ♀ discal spots small and dusky, spots in 2 and 3 small or absent.

*garuda anagama*, Fruh. (55-75). Bombay—Orissa. Kangra—Kumaon. NR.

δ. Darker than last and discal spots upf smaller.

*garuda suddhodana*, Fruh. (55-75). Bengal. Sikkim. NR.

η. WSF dark and spots upf complete and prominent. WSF ♀ spots as in ♂; DSF ♀ spots end cell very large and confluent, spots in 2 and 3 may be small or absent.

\**garuda garuda*, M. (55-80). Assam—Burma. NR. (= *merilia*, Swin.).

ζ. Very large. ♂ dark and discal spots obscure, apical spots prominent and outer discal band wide. ♀ with complete discal band as in α, but more diffused and linked Y-wise to the apical spots; discal band continued widely on H between the dark discal lines.

*garuda acontius*, Hew. (65-85). Andamans. R.

15a (14). Upf outer discal line continuous or absent, but never of well separated small spots.

15 (16). Upf white streak at termen in 7, which on unf extends into 6 and 8. ♂ above very dark brown, outer discal band broad and inclined inwards, being continued on H as the inner band. Upf beyond cell a series of double spots in 3-6, the lower one in 5 being continued as a streak so as to meet a lower spot in 6. ♀ paler and outer discal band narrower.

α. Small, pale and markings narrow.

*jama jamida*, Fruh. (55-75). The Streaked Baron. Sikkim. NR.

β. Larger and darker. ♂ upf white streaks prominent above in WSF, absent in DSF.

*jama jama*, Fd. (55-85). Assam, Manipur. NR.

γ. As last, but smaller and never so dark. ♂ upf white streaks nearly or quite obsolete.

*jama verena*, Fruh. (55-80). Burma. NR.

16 (15). Upf no white streak at termen in 7. ♂ upf marked as in last, but outer discal band is parallel to margin and white streaks very prominent; upf margin broadly pale blue to v6 and termen narrowly pure white. ♀ quite different, paler brown with a broad white discal band upf from costa to termen at v1; 2 prominent apical spots.

\**phemius*, Db. and Hew. (65-70). The White-edged Blue-Baron. Sikkim—Burma. NR. (= *sancara*, M.)

F18. *Euthalia*.—The Barons, Counts, etc. (Plates 19 & 20)—*contd.*

17 (14b). Above dark green with red spots H and in cell F. ♂ upf a Y-shaped discal band of small white spots and ♀ with a large white spot before end cell as well as a macular white discal band. Uph outer row dark spots sub-marginal, not discal.

a. Upf sub-marginal band much broader. In ♂ there is a strong contrast between the dark basal and the green marginal areas. ♀ outer edges of the 2 spots in 1 and lower edge spot in 2 not to termen, in line with spot in 3.

*lubentina psittacus*, Fruh. (65-80). The Gaudy Baron. Ceylon. NR.

β. ♂ above nearly uniform dark green, but paler than other races. ♀ more brilliant pale green, upf band narrow and sharply defined.

*lubentina arasada*, Fruh. (60-80). S. India.

γ. Dark and uniform. Considerable seasonal variation.

\* *lubentina indica*, Fruh. Bombay—Bengal. Kangra—Burma.

18a (1b). Unf cell closed or at least with a small spur from base of v5. Mostly dark green.

Evelina Group.

18 (19a). Upf a sub-marginal row white spots; white discal band to just beyond mid-dorsum and on H to v2. Below shining pale greenish blue. F cell not fully closed. Upf and unf no basal markings in 1.

a. Above white discal band broad and all markings slightly diffused.

*franciæ franciæ*, Gray. (75-90). The French Duke. Sikkim, Nepal, Bhutan. R. (= *galara*, Fr).

β. Above white discal band narrow and all markings sharp.

\* *franciæ rajah*, Fd. Assam—Karens. R. (= *attenuata*, *japroa*, Tyl.).

19a (18). Upf no row of sub-marginal white spots. F cell closed.

19b (27). Apex F not falcate; no red spot in cell upf. Usually prominent pale discal band upf. Upf at base 1 a ring and a dot usually under origin v2.

19c (21a). Upf white discal band vertical, reaches dorsum just beyond middle; on H discal band to v1 and outwardly bordered bright greenish blue. H cell open; F vs 11 and 12 anastomosed.

19 (20). Uph white discal band not black edged outwardly before the blue area.

*duda*, Stg. (90-100). The Blue Duchess. Sikkim—Assam. R.

20 (19). Uph white discal band outwardly black edged.

a. Uph blue area not formed into lunules except near costa.

\* *durga durga*, M. (95-105). The Blue Duke. Sikkim—Abor. R.

β. Uph blue area formed into blue lunules throughout. The discal band upf and all the markings below broader.

*durga splendens*, Tyl. Nagas. VR.

21a (19c). Upf white discal band, if present, directed to tornus and not extending below v2. Cell H shut; F v11 free.

21 (22a). ♂ above bronzy olive green, no white discal band; upf large dusky pale spots in 2 and 3; uph prominent yellow area in 6 and 7. ♀ upf with a rather narrow white discal band, spot in 4



**F18. Euthalia.—The Barons, Counts, etc. (Plates 19 & 20)—contd.**

narrow, elongate, pointed and well separated from the spots on either side.

*\*nara nara*, M. (70-95). The Bronze Duke. Sikkim—N. Burma. R. (= *anyte*, Hew.).

β Above bright dark green.

*nara shania*, Evans. Shan States. R.

22a (21). ♂ upf with pale discal band; ♂ ♀ with spot in 4 conjoined to spots on either side.

22 (23a). Uph ♂ ♀ continuous curved discal band from costa to v4; upf discal band narrow and dusky at lower end, upper spots small, that in 4 smaller than the rest. Above shining bronzy olive green.

*khama curvifascia*, Tyt. (75-95). The Naga Duke. Nagas. Manipur. VR. (= *anæa*, Niepelt).

23a (22). Uph discal band macular and upf spot in 4 as large as the rest; discal band in the ♂ pale yellow, in ♀ white usually.

23b (26). Upf lower subapical spot very much larger than the upper one and much nearer to the termen.

23 (24a). Upf distance of outer edge of spot in 2 from termen about equal to the length of the spot: discal spot in 3 with its inner edge against the centre of the spot in 4.

α. ♂ uph the discal spots extend to 1 and beyond the spots in 5 and 6 the wing is conspicuously paler, showing up the very broad postdiscal dark band.

*sahadeva sahadeva*, M. (80-105). The Green Duke. Sikkim—Bhutan. NR.

β. Darker. ♂ uph discal spots at most only to 2. ♀ uph usually only spots in 6 and 7 and often none at all.

*\*sahadeva nadaka*, Fruh. Assam—Manipur. NR.

γ. Smaller, paler and with a less bronzy hue. All spots smaller and paler.

*sahadeva narayana*, GrS. and Kir. N. Burma—N. Shan States. NR.

24a (23). Upf distance of outer edge of spot in 2 from termen about half the length of the spot: spot in 4 outwardly pointed.

24 (25). Upf discal spot in 2 longer than the spot in 3: usually a white spot in 1b beyond the middle and a diffused whitish tornal patch. Uph small separate spots in 5, 6, 7 and unh also in 2, 3, 4.

*iva*, M. (115-125). The Grand Duke. Sikkim—Manipur. VR.

25 (24). Upf discal spot in 2 shorter than the spot in 3; no markings in 1b. Uph conjoined diffuse white spots in 6, 7, extending unh into 5.

*pratti cooperi*, Tyt. (108-124). The Shan Duke. Maymyo. VR.

26 (23b). Upf subapical spots approximately equal and one above the other: discal spots in 3, 4 with their inner edges in line.

α. Upf no white spots in 1; upf discal band yellow in ♂ and white in ♀.

*patala patala*, Koll. (85-105). The Grand Duchess. Murree—Nepal. NR. (= *doubledayi*, Gray: *epiona*, M.).



**F18. Euthalia.—The Barons, Counts, etc. (Plates 19 & 20)—contd.**

β. Upf or unf 2 small white spots in 1. Upf discal band yellow in ♂ and white in ♀, all spots elongated. Below paler and spots on H more complete.

*patala taoana*, M. (100-120). Manipur—Dawnas. R.

27 (19b). Apex F falcate. Upf red spot in cell. Above no white band. Upf no markings base 1. Cells shut.

α. ♂ dark, ♀ paler, olive green, basal areas darker.

*evelina evelina*, Stoll. (75-100). The Redspot Duke. Ceylon. R.

β. ♂ shining green; upf with a white costal patch beyond cell; ♀ paler, the whole discal area between the basal and dark marginal area is whitish.

\**evelina laudabilis*, Swin. S. India. R.

γ. Above brown.

*evelina derma*, Koll. Assam—S. Burma. (= *eva*, Fd.: *vallona*, Fr.).

28a (1a). Unh with 2 spots in cell, which may be reddish and no markings in 5, 6 and 7.

28 (29a). Above tawny orange with black markings. Cells open. Nais Group.

\**nais*, Forst. (60-70). The Baronet. Ceylon. S. India—Dun—Sikkim. NR.

29a (28). Above brown, with a white band or spots. Cells faintly closed.

Teuta Group.

29b (31). Upf white spots in 6 and 7 not conspicuously far larger than the rest. Upf and uph a complete discal band (except ♀ of No. 30 β) ending on F just beyond mid dorsum.

29 (30). Upf upper spot of discal band in exact line with rest. Upf 1 or 2 small red tornal spots.

*recta*, DeN. (65-85). The Redtail Marquis. Assam—Burma. R. (= *monilis*, M.).

30 (29). Upf upper spot of discal band shifted in. Upf no red tornal spots.

α. Below pale ochreous brown. Upf discal band decreasing slightly, but evenly, to costa. Sexes nearly alike.

\**teuta teuta*, Db. and Wd. (65-85). The Banded Marquis. Assam—Arracan. R.

β. ♂ as last but discal band much narrower and uph postdiscal black spots usually joined to form a lunular line. ♀ very variable: upf discal spots may be small and complete, increasing in size to costa, or some or all may be absent, being sometimes replaced by black spots; uph similar, but the discal spots never below v4. Ground colour in ♀ may be pale or dark brown and the area between the 2 discal rows of spots upf may be greenish blue. Below pale lavender grey to ochreous brown.

\**teuta gupta*, DeN. Dawnas—S. Burma. VR. (= *goodrichi*, Dist.: *ira*, M.).

γ. Below pale glazed violet brown. Above as α in both sexes, but upf in ♂ spot in 5 very small; ♀ spots at upper end of discal band very large and at dorsal end very small, spot in 1 double.

*teuta teutoides*, M. (65-90). Andamans. R.

F18. *Euthalia*.—The Barons, Counts, etc. (Plates 19 & 20)—*contd.*

31 (29b). Uph spots in 6 and 7 very large and contiguous. Above rather pale brown; upf with 2 discal spots in 1, one in each 2, 3 and 6; a spot in mid cell flanked white on either side. Uph small white spots in 1-5 directed to mid dorsum and not to tornus as usual.

\**dunya*, Db. and Hew. (85-100). The Great Marquis. S. Burma.

F19. *Adolias*.—The Archdukes. (Plate 20).

1 (2a). Palpi below greenish brown in ♂; whitish in ♀. Antennæ black above. ♂ upf velvet black with a few whitish spots in and beyond the cell; ♀ with numerous white spots. Below indigo blue at base F; apex F and all H dark green; spots white.

*cyanipardus*, But. (110-135). The Great Archduke. Assam—Karens. R.

2a (1). Palpi below reddish brown.

2 (3). Antennæ black above. Below ♂ ferruginous brown.

a. ♂ upf practically unspotted and the blue border vestigial; uph blue border narrow and mostly purple. ♀ above spots bluish white; below ochreous brown and H hardly or not at all green washed; upf spots at bases 2 and 3 large.

*khasiana khasiana*, Swin. (80-105). The Dark Archduke. Assam. NR. (= *dolia*, *dirteoides*, Fr.).

β. ♂ upf markings more developed, uph blue border broader and mostly blue, turning to green at the tornus. ♀ spots pale yellow upf and dark yellow uph.

\**khasiana intermedia*, Tyt. Manipur. NR.

γ. Margins broader.

*khasiana merguia*, Tyt. Mergui. NR.

3 (2). Antennæ prominently yellow tipped above. Below ♂ pale ochreous brown. ♂ blue border upf broad and small spots in and beyond cell prominent, yellow; uph blue margin very broad, blue at upper end, green at tornus. ♀ all spots yellow; upf spots at bases 2 and 3 small.

\**dirtea jadcitina*, Fruh (8-105). The Archduke. Manipur—Burma. NR.

F20. *Parthenos*.—The Clipper. (Plate 21).

Above some shade of green with very large discal white spots F; uph on disc the veins are black and there are 2 black lines between each vein, followed by a series of sub-marginal black markings.

a. Above pale greenish grey; F white spots very large; uph sub-marginal markings consist of narrow flattened lunules.

\**sylvia cyaneus*, M. (115-130). The Clipper. Ceylon. NR.

β. Above greenish golden; F spot end cell as large as spot in 3. Uph sub-marginal markings are conical spots, heads rounded.

*sylvia virens*, M. (105-125). S. India. R.

γ. Above rather pale bluish green. DSF upf with the apex whitish and the white spots more contiguous.

**F20. Parthenos.—The Clipper. (Plate 21)—contd.**

*sylvia gambrisius*, F. (95-110). Bengal—Burma. NR. (= *apicalis*, M).

♂. Above moss green, below paler; upf apex white tipped.

*sylvia roepstorffii*, M. (95-110). Andamans. NR.

η. Upf the area mid dorsum to the white band and in the middle of the disc uph is bright cyaneous blue. Upf postdiscal dark band is confluent and not macular.

*sylvia nila*, nov. South Nicobars. R.

**F21. Lebedea.—The Knight. (Plate 21).**

α. Larger, bands above broader; upf inner edge spot in 2 vertical; uph discal band fills base 3.

*martha martha*, F. (62-75). The Knight. Sikkim, Nepal, Bhutan. NR. (= *laxata*, Hall).

β. Smaller, not so bright and bands narrower; upf inner edge of spot in 2 curved; uph discal band just enters base 3 in ♂ only.

*martha ismene*, Db. and Hew. (60-70). Assam—Manipur. NR.

γ. Still smaller and bands very narrow; uph band not entering base 3 at all.

\* *martha attenuata*, M. (55-65). Burma. NR.

**F22. Neurosigma.—The Panther. (Plate 21).**

α. ♂ DSF tawny with 9 large black spots on the basal half and 2 lunular black bands on the outer half of the F; uph basal two-thirds tawny with black markings, outer third black with 2 rows of white spots. WSF ♂ and both ♀♀ with bases only tawny and the rest white.

\* *doubledayi doubledayi*, Wd. (80-100). The Panther. Sikkim—Chittagong. R. (= *siva*, Wd.: *fraterna*, M.).

β. Smaller and paler, base F only tawny; H no tawny colour.

*doubledayi nonius*, DeN. (70-90). Karens. Dawnas. R.

**F23. Abrota.—The Sergeant-major. (Plate 21).**

♂ above tawny with dark bands; uph 4 bands of which the two central ones are well separated in the WSF and nearly united in the DSF. ♀ dark brown with dusky tawny bands; upf a streak in cell with a spot beyond; uph 2 tawny bands.

\* *ganga*, M. (90-70). The Sergeant-major. Sikkim, Bhutan. NR. (= *junna*, M.).

**F.24 Limenitis.—The Admirals, etc. (Plates 21 and 22).**

1a (8a). F upper end of cell about opposite origin v3. Antennæ not prominently yellow tipped. Upf discal band, if present, not strongly curved.

F24. *Limnitis*.—The Admirals, etc. (Plates 21 and 22)—contd.

1b (7). F lower dcu ends about origin v3. No prominent large white spot at end cell.

1c (3a). H cell closed. Eyes smooth. Palpi smooth and white. Above ♂ no prominent pale discal band.

Danava Group.

1 (2). Upf highly zigzagged postdiscal double line and uph inverted V shaped spots. Above dark brown, paler brown discal band.

a. Above not purple glossed. Below grey.

\* *austenia austenia*, M. (85-90). The Grey Commodore. Assam. N. Burma. R.

β. Above purple glossed.

*austenia purpurascens*, Tyl. Abor Valley. VR.

2 (1). No such zigzag line. ♂ above dark brown basally and pale brown outwardly, with a dark brown straight band, tornal area H dark green. ♀ dark green with outer area white, greenish discal band F and dark band H.

*danava*, M. (80-85). The Commodore. Simla—Dawnas. R.

3a (1c). H cell open. Eyes hairy. Palpi white, hairy at sides. Above with a prominent pale discal band.

Zayla Group.

3 (4a). Upf the band yellow; uph white.

\* *zayla*, Db. and Hew. (80-95). The Bicolour Commodore. Sikkim—Assam. NR.

4a (3). Upf discal band not yellow.

4 (5a). Upf discal band curved out at the upper end to the apical spots; the band green.

\* *daraxa*, Db. and Hew. (60-70). The Green Commodore. Sikkim—Karens NR.

5a (4). Upf discal band curved in at the upper end, well away from the apical spots; the band white or nearly so.

5 (6). Upf discal band continuous to costa. Below mauve, apex F and tornus H chestnut; uph spots in cell and base 7 white.

\* *dudu*, Wd. (75-85). The White Commodore. Sikkim—S. Shan States. R.

6 (5). Upf discal band macular at upper end; beyond discal band there are 2 rows of black spots, separated by a fulvous line; discal band tinted blue. Below prominent dark basal markings.

*zulema*, Db. (80-85). The Scarce White Commodore. Sikkim—Dawnas. VR.

7 (1b). F lower dcu ends far beyond origin v3. Eyes smooth. Palpi smooth and white. Above prominent white discal band. Up 2 rows sub-marginal black spots on a tawny area. H cell open.

Procris Group.

a. Upf no white spot at end cell.

*procris calidasa*, M. (60-75). The Commander. Ceylon. NR.

β. Upf large white spot end cell. Above discal band narrow, especially on H; upf sub-marginal reddish brown band narrow. Below darker.

*procris undifragus*, Fruh. S. India. NR.

γ. As last, but all bands above wider. Below paler and more irrorated violet.

F24. *Limnitis*.—The Admirals, etc. (Plates 21 and 22)—*contd.*

\* *procris procris*, Cr. Dun—Burma. NR. (= *chlœna*, Fr. : *diluta*, Ob.).

δ. Upf spot end cell very small and sometimes absent. Larger and black markings above wider.

*procris anarta*, M. Andamans. NR.

8a (1a). F upper end cell opposite well before origin v3; lower dcu ends about origin v3. Cells shut. Eyes smooth. Palpi hairy, white below, black lined at sides. Upf prominent white bar mid cell and a curved white discal band on both wings; 2 apical dots on F.

Trivena Group.

8 (9). Upf single bar in cell.

α. Above discal band of well separated small spots, 2 mm. wide : double marginal row of red spots, divided by black spots.

*trivena gilgitica*, Tyt. (60-75). The Indian White Admiral. Chitral, Astor, Gilgit, Chilas, Kagan and Kishengunga Valleys. NR.

β. Discal band wider, 3 mm. and conjoined on H : marginal red spots smaller, inner row obsolescent.

*trivena hydaspes*, M. Scinde and Liddar Valleys, Kashmir. Gurais. NR.

γ. Discal band still wider, 4 mm : single row of outer red spots.

*trivena ligyes*, Hew. Pir Panjal, Kashmir. NR.

δ. Discal band very wide, 7 mm. and conjoined : ochraceous red spots outside the black submarginal spots.

\* *trivena trivena*, M. Murree—Kangra. C.

η. As last, but always a white spot base 1b, usually conjoined to the discal band; submarginal spots ochraceous white. Below no orange.

*trivena pallida*, Tyt. Kulu—Kumaon. C.

9 (8). Upf two bars in cell : discal band broken into well separated spots.

*elwesi*, Ob. (62). The Chinese Admiral. S. Shan States. VR.

F25. *Pantoporia*.—The Sergeants. (Plate 22).

1a (11a). F cell shut.

1b (8a). Eyes smooth.

1 (2a). Unh 5 prominent black spots about the origin of v7. Sexes alike, markings normal, white. Uph cell streak and spot beyond end cell entire, incised once on upper side; discal spots well separated, that in 2 large, in 3 small, in 4 a long streak under the middle of spot in 5. F lower dcu ends well beyond origin of v3.

Sulpitia Group.

*sulpitia adamsoni*, M. (55-75). The Spotted Sergeant. N. Burma. VR.

2a (1). Unh no prominent black spots about origin v7, but with brown streaks more or less prominent. F lower dcu ends about origin v3.

Nefte Group.

F25. *Pantoporia*.—The Sergeants. (Plate 22)—contd.

2b (6a). Sexes dissimilar. ♂ Upf discal streak obscure or very broken; discal spots dorsum to 2 or 3 conjoined and directed to apex or costa, not mid termen as usual. F lower dev ends at or just after origin v3.

2c (4a). F no prominent discal spot in 3 as wide as and in line with the spots in 1 and 2. ♀ with broad orange markings normally arranged.

2 (3). ♂ unf discal streak much broken. ♀ discal spots in 4, 5 and 6 form a continuous, even-edged, apical band.

a. ♂ uph postdiscal band broad orange; apical orange markings upf and always a small discal spot in 3.

*nefte inara*, Db. (55-70). The Colour Sergeant. S. India, Sikkim—N. Burma. NR. (= *inarina*, But).

β. Uph postdiscal band white or partly white; upf spot in 3 usually present; discal streak better defined; bands narrower.

*nefte asita*, M. Shan States—Tavoy. NR. (= *asitina*, Fr.).

γ. ♂ markings above white, not orange and no discal spot in 3 upf.

*nefte nivifera*, But. Tavoy—S. Burma. NR.

δ. ♂ uph no postdiscal band, just a brown line. ♀ markings mostly white, orange tipped towards apex upf.

*nefte rufula*, DeN. Andamans. NR.

3 (2). ♂ unf discal streak continuous, but upper edge irregular. ♀ discal spot in 4 small and against outer edge spot in 3. ♂ upf discal streak obscure ferruginous; prominent orange apical markings; uph postdiscal band obscure.

\* *cama*, M. (60-75). The Orange Staff Sergeant. Mussoorie—Burma. NR. (= *camida*, Fr.).

4a (2c). F prominent discal spot in 3 upf and no apical orange markings in ♂. ♀ with white or sullied brownish bands above.

4 (5). Unf discal streak twice divided by a brown line across cell; triangular spot beyond well separated, obscure in ♂, prominent in ♀, lies at the base of 5 and not of 4 as usual.

a. ♂ above darker, bands narrower, discal spot in 4 parallel to rest and not inclined as usual; spot in 2 wider than rest; cell streak obsolete except for a single pale spot; below darker. ♀ white markings broad; below rather pale ochreous brown.

*selenophora kanara*, Evans. (60-70). The Staff Sergeant. S. India. NR.

β. ♂ markings broad, reddish mark in cell prominent. White markings in ♀ often sullied more or less. Seasonal forms well marked.

*selenophora selenophora*, Koll. (55-75). Mussoorie.—Burma. NR. (= *bahula*, M.).

5 (4). Unf streak in cell entire and hardly separated from the spot end cell in 4; apical white spots coalesced to a band. ♂ upf discal streak very obscure, discal band slightly curved in. ♀ markings sullied pale brown.

*seroca*, M. (50-65). The Small Staff Sergeant. Kumaon—Burma. NR.

6a (2b). Sexes alike (except for colour in No. 6); (except ♀ of No. 6) discal spot in 2 well separated from the spot in 1, no discal



F25. *Pantoporia*.—The Sergeants. (Plate 22)—*contd.*

spot in 3; lower part of discal band directed to mid termen; discal streak prominent. Markings white (except No. 6 ♀).

6 (7). Upf discal streak twice divided and well separated from the spot beyond. ♀ with pale brown confluent markings, very like ♀ of No. 2, but bands on H narrower than the dark brown space between. F lower dcu ends just after origin v3.

*reta moorei*, Fr. (60-70). The Malay Staff Sergeant. Assam—Mergui. VR. (= *kresna*, *subrata*, M.).

7 (6). Upf discal streak entire and separated from spot beyond. Below olive brown. F lower dcu ends just after origin v3.

*kanwa phorkys*, Fruh. (60-70). The Dot-dash Sergeant. Assam—Burma. R.

8a (1b). Eyes hairy. F lower dcu ends just after origin v3. Upf always a discal spot in 3.

8 (9a). Upf discal band normal, spots in 1b-3 directed to termen and in line with spot in 4; cell streak twice divided and well separated from the spot beyond. F upper apex cell acute, upper and lower dcus in a continuous concave line.

Opalina Group.

α. Above white bands broad and always pure white.

*opalina opalina*, Koll. (60-70). The Hill Sergeant. Kashmir—Kumaon. C.

β. Above white bands narrow and often sullied.

*opalina orientalis*, El. (55-70). Sikkim—Burma. NR.

9a (8). Upf discal band abnormal, discal spot in 3 at base 3, centre line of spots in 2-3 pointing to the costa; spot in 2 nearer base than usual and more widely separated from spot in 1. F upper end cell right angled and lower dcu takes off from some distance along v5, not in line with upper dcu.

Ranga Group.

9 (10). Upf basal band straight, narrow and continuous; post-discal band white. Upf discal spot in 3 minute; apical 3 spots directed to mid termen, marginal spots small and white; cell streak consists of a narrow streak and a large spot beyond in the cell, no spot beyond end cell as usual; unf end cell marked by a white bar. Below dark brown. Sexes alike. Upf obscure bluish green spots in cell.

*abiasa clerica*, But. (60-70). The Abnormal Sergeant. S. Burma. VR.

10 (9). Upf basal band broad, curved; spot in 7 separated from rest; postdiscal band sullied also all marginal markings in ♂, whiter in ♀. Upf no cell streak, obscure bluish spots in cell and at base of 1; apical spots directed to tornus. Below pattern abnormal, white markings very broad and veins black.

α. ♂ above discal band only present; postdiscal band H absent.

♀ prominent wide postdiscal and marginal bands F and H.  
*ranga karwara*, Fruh. (60-70). The Blackvein Sergeant. S. India. R.

β. ♂ above with sullied postdiscal and marginal spots.

*ranga ranga*, M. Sikkim—Burma. R. (= *mahesa*, M.).

11a (1a). F cell open; apex cell obtuse.

Perius Group.

F25. *Pantoporia*.—The Sergeants. (Plate 22)—*contd.*

11b (15). Eyes smooth.

11c (13a). Upf no discal spot in 3.

11 (12). Upf unbroken streak in cell and no spot beyond.

*pravara acutipennis*, Fruh. (55-60). The Unbroken Sergeant. Assam—Burma. R.

12 (11). Upf streak in cell divided so as to enclose a small spot in the middle; a triangular detached spot beyond the streak.

*larymna siamensis*, Fruh. (75-100). The Great Sergeant. Manipur—S. Burma R.

13a (11c). Upf with a discal spot in 3.

13 (14). Upf cell streak narrow, entire, with a rounded, detached, spot beyond.

a. Upf a black spot in the centre of each white spot forming the postdiscal band.

\**asura asura*, M. (65-75). The Studded Sergeant. Kulu—Tavoy. R.

β. Upf no black spots on the postdiscal band.

*asura idita*, M. (60-70). Mergui—S. Burma. R.

14 (13). Upf cell streak divided into 4 portions. Unh prominent row of black spots on the inner edge of the postdiscal band.

\**perius*, L. (60-70). The Common Sergeant. S. India—Simla—Burma. C.

15 (11b). Eyes hairy. Upf cell streak entire and no spot beyond; a discal spot in 3.

a. Larger, markings sullied.

\**jina jina*, M. (60-75). The Bhutan Sergeant, Sikkim, Nepal. Bhutan. VR.

β. Smaller, markings clear white.

*jina jinoides*, M. (55-70). N. E. Burma. VR.

F26. *Neptis*.—The Sailers and Lascars. (Plate 22).

1a (28a). F v10 ex cell.

1b (10a). Upf cell streak always divided into a basal streak and a spot beyond. Above markings white or sullied.

1c (4a). Upf discal spots in 2 and 3 in line with the discal spot in 5, which line is directed to the costa well before the apex. Upf inner discal band never to the costa.

Columella Group.

1d (3). Unh basal white markings normal, consisting of a costal streak and a streak across base cell, which is often continued under v7.

1 (2). Upf postdiscal row of white spots prominent and separate. Below termen broadly chequered black at the ends of veins and white in the interspaces. H. v8 ends on termen and is aberrant.

a. Above markings tinged blue.

*columella nilgirica*, M. (65-70). The short-banded Sailer. S. India. NR.

β. Above markings white.

\**columella ophiana*, M. Dun—Burma. NR. (*martabana*, M: *alesia*, Fr).

**F26. Neptis.—The Sailers and Lascars. (Plate 22)—contd.**

γ. Larger. Below very dark and outer white markings much developed; lunules beyond sub-basal band in a series of deep crescents.

*columella kankena*, Evans. (75). South Nicobars. VR.

2 (1). Uph postdiscal row white spots absent or represented by a narrow continuous line. Unf. usually with prominent dark chestnut discal streaks beyond the cell and unh prominent large discal black spots and a black spot in cell near base.

a. All white markings narrow. Below darker; unh discal spot in 7.

*jumbah nalanda* Fruh. (60-70). The Chestnut-streaked Sailer. Ceylon. NR.

β. Unh with a discal spot in 7.

*jumbah jumbah*, M. S. India—Bengal—Burma. NR.

γ. Unh no discal spot in 7.

*jumbah amorosca*, Fruh. Andamans. NR.

δ. Upf 5 not 6 discal spots; unh termen bluish white with a black line.

*jumbah binghami*, Fruh. Nicobars. (Fruh). VR.

3 (1d). Unh basal white streak broad, single, not entering cell or extending below v8 (also so in Nos. 13a and 15). Below very uniform dark brown.

a. Upf pale markings very narrow and bluish; discal spot in 3 reduced to a dot. Uph postdiscal spots large and with diffuse edges. Unh white sub-marginal band discontinuous.

*magadha khasiana*, M. (55-60). The Spotted Sailer. Bhutan—N. Burma. R.

β. Upf markings broader; uph postdiscal spots small. All markings sharp. Unh white sub-marginal line continuous.

*magadha magadha*, Fd. S. Burma. R. (= *charon*, But.: *cine-racea*, GrS.).

4a (1c). Upf discal spots in 2 and 3 not in line with spot in 5 and the line joining 2 and 3 points to termen below apex (in No. 5 and individuals of No. 6 it points to the apex).

Hylas Group.

4 (5a). Uph discal band not to costa. Abdomen white where discal band uph meets it, as in *Pantoporia*. Below uniform dark brown.

*nata cresina* Fruh. (55). The Burmese Sailer. Karens—S. Burma. R.

5a (4). Uph white discal band to costa (or very nearly so in individuals of No. 7). Abdomen never white banded.

5b (7a). H termen prominently chequered black and white and below markings more or less black edged, more especially inner discal band unh. Unf spot end cell well separated from basal streak.

5 (6). Upf apical part of discal band nearer termen, crosses base of v8 and is nearly at right angles to the costa, the costal streak as wide as the rest; discal spot end cell outwardly blunt; discal spots in 2 and 3 directed to apex; spots of upper and lower part of the discal band usually confluent. Below black edgings to markings obscure. Uph the white discal band widens towards the costa.

*mahendra*, M. (55-60). The Himalayan Sailer. Chitral—Kumaon. C.

F26. *Neptis*.—The Sailers and Lascars. (Plate 22)—*contd.*

6 (5). Upf upper part of discal band well behind base of v8 and is oblique, costal streak short and behind the spots below it; discal spot end cell outwardly sharp pointed. Uph inner discal band not widening towards costa.

a. Above white markings broad and sharp. Below rather dark ochreous and unf veins beyond cell prominently black.

*hylas varmona*, M. (50-60). The Common Sailer. Ceylon. S. India—Kumaon and Sikkim. VC. (= *eurynome*, L.: *leucothoe*, Cr.: *disrupta*, *kamarupa*, M.: *eurymene*, *swinhoei*, But.).

β. Above markings narrow and often sullied. Below ferruginous brown, no veins blackened.

\**hylas astola*, M. Kashmir—Karens (Hills). VC. (= *emodes*, M.).

γ. Below bright golden ochreous, no veins blackened. Above markings broad. Very variable.

*hylas adara*, M. Assam. Burma. (Plains). VC. (= *mamaja*, But.: *meetana*, M.).

δ. As last. Uph postdiscal band narrow and unh inner discal band more prominently black edged than usual.

*hylas andamana*, M. Andamans. C.

η. Upf spots in 2 and 3 directed to apex. All markings very broad. Below rather dark ochreous and white markings along termen broader. Unh inner discal band constricted at ends.

*hylas nicobarica*, M. Car and Central Nicobars, C.

ζ. Above markings reduced, but the sub-marginal spots are clear: uph central band narrower. Below darker, black edging to central band unh broader.

*hylas sambilanga*, nov. South Nicobars. C.

7a (5b). H termen not prominently chequered and below markings not black edged. Unf cell streak and spot beyond often conjoined; discal spots in 2 and 3 always directed to termen.

7 (8a). Uph inner discal band very narrow, does not enter base 3, or if so, there is an equivalent dark space at base 2. All markings narrow and macular usually sullied above. Below dark ochreous brown.

a. Large. Uph spots of postdiscal band widely separated, spaces between as wide as the spots.

*soma kallaura*, M. (60-70). The Sullied Sailer. S. India. R.

β. Small. Uph postdiscal spots conjoined.

*soma soma*, M. (50-60). Mussoorie—Burma. R. (= *adipala*, M.: *gonotata*, But.).

γ. Larger and darker. Unh inner discal band broad. Very like *nandina clinia*, but below dark chocolate brown and unf discal spots in 2 and 3 are rounded and further from the margin.

*soma mananda*, M. (55-60). Andamans. NR.

8a (7). Uph inner discal band always fills base 3 and extends up to base 2 or beyond. Below much brighter ochreous brown.

8 (9). Upf upper 3 spots of sub-marginal line not markedly shifted in. Unh the 2 pale sub-marginal lines, not equally prominent, the outer one obscure.

a. Above markings broad, not sullied; upf discal spots in 2 and 3 outwardly rounded.

F26. *Neptis*.—The Sailers and Lascars. (Plate 22)—*contd.*

*nandina hampsoni*, M. (55). The Clear Sailer. S. India—Central Provinces. R.

β. Upf discal streak usually sullied; discal spots in 2 and 3 outwardly square or concave.

*nandina susruta*, M. (45-60). Sikkim—Burma. C. (= *cacharica*, *leuconota*, But. : *ancus*, Swin.).

γ. Uph postdiscal band obscure or absent. Much darker above; inner discal band uph broad and prominent.

*nandina clinia*, M. Andamans. C.

9 (8). Upf upper 3 spots of sub-marginal series shifted in markedly and at right angles to costa. Uph white band broad and expanding to costa. Unh the 2 sub-marginal white lines equally prominent.

a. Large, markings wide, unsullied, but sometimes yellow tinged. Upf discal spot in 2 outwardly concave.

*yerburyi yerburyi*, But. (60-70). Yerbury's Sailer. Kashmir—Kumaon. NR.

β. Smaller and markings much narrower, usually slightly sullied. Upf discal spot in 2 outwardly rounded.

*yerburyi sikkima*, Evans. (58-60). Sikkim—Assam. NR.

γ. As last, but markings wider. Upf discal spot in 2 outwardly rounded.

*yerburyi shania*, Evans. (55-60). N. Burma. NR.

10a (1b). Upf cell streak and spot beyond conjoined (in No. 13 nearly as separated as in No. 8a).

Heliodore Group.

10b (23a). Upf cell streak not extending into base 3 (but see No. 20a where spot in 3 lies at base 3 and touches cell streak).

10c (17a). Unf no pale spots on costa above end cell streak internal to the upper discal spots.

10d (15a). Above markings not orange yellow and upf sub-marginal pale line always traceable.

10e (13a). Unh basal costal streak narrow and not more prominent than the streak base cell; both prominent in No. 10 and obscure in Nos. 11 and 12.

10 (11a). Upf the usual pale line between the discal and the sub-marginal spots absent. Above all markings broad and clear.

a. Above markings very broad and white; upf discal spot in 4; uph discal band reaches costa.

\**sankara sankara*, Koll. (65-75). The Broad-banded Sailer. Kashmir—Kumaon. NR. (= *amba*, *amboides*, M.).

β. As last, but markings narrower; spots forming discal band well separated.

*sankara quilta*, Swin. Sikkim—Burma. NR.

γ. Above very dark, pale markings F and postdiscal band H tinged yellow; inner discal band H narrowing to costa and not reaching it; upf no discal spot in 4 and uph sub-marginal pale line absent. Below very dark brown, tinged violaceous.

*sankara nar*, DeN. Andamans. VR.

11a (10). Upf with the usual thin pale line between the discal and sub-marginal markings, the line highly zigzag; all markings

F26. *Neptis*.—The Sailers and Lascars. (Plate 22)—*contd.*

obscure, fuliginous brown and very narrow. Uph inner discal band not to costa.

11 (12). Upf discal spot in 2 more or less quadrate; cilia at apex prominently white. Uph inner discal band to v7 in ♂; postdiscal and sub-marginal pale lines well separated. Below dark brown, pale markings all prominent and white.

*vikasi pseudovikasi*, M. (60-70). The Dingy Sailer. Kumaon—Assam. NR. (= *suavior*, Fr.).

12 (11). Upf discal spot in 2 crescentic; cilia not prominently white at apex. Uph in ♂ discal band only to v5; postdiscal and sub-marginal pale lines wide and close together, encircling the dark area between so as to form a row of dark spots. Below olive brown, all pale markings obscure pale brown.

*hurita*, M. (55-60). The Dingiest Sailer. Bengal—Burma. NR.

13a (10e). Unh basal costal streak broad, extending to v8 only and no pale streak base cell (just as in Nos. 3 and 15).

13 (14). Above markings from white to more or less sullied, discal spots macular and well separated. Upf always prominent discal spot in 3; sub-marginal pale spots prominent and the highly zigzag line between them and the discal spots. Very like *nandina*, but easily separated by the basal costal markings unh.

a. Above markings broad.

*cartica cartica*, M. (55-70). The Plain Sailer. Sikkim—Assam. NR. (= *carticoides*, M).

β. Above markings narrow.

*cartica burmana*, DeN. Assam—Burma. NR.

14 (13). Above markings highly sullied and diffused; upf no discal spot in 3 and the line between the discal and sub-marginal markings not zigzag.

a. Uph inner discal band whitish, other markings pale brown; unf sub-marginal pale line at apex not bent in parallel to apical discal spots. Below dark ochreous brown and all markings more or less white.

*anjana nashona*, Swin. (65-70). The Rich Sailer. Sikkim—S. Shan States. R.

β. ♀ very much as in α, but unf in ♂ and ♀ the sub-marginal pale line at the apex curved in parallel to the apical discal spots. ♂ above very dark with narrow brown bands; below very dark ferruginous ochreous, flushed violet, markings not white.

*anjana anjana*, M. Karens—S. Burma. R.

15a (10d). Above markings orange yellow and sub-marginal line upf obscure.

15 (16). Unh basal costal streak broad and no streak at base cell. Upf discal spots in 1 and 2 well separated; unf spot in 5 small, completely detached from spot in 6 and not extending below v5. F termen excavated in middle.

a. Below markings pale clear ochreous.

*ananta ananta*, M. (55-70). The Yellow Sailer. Chamba—Kumaon. R. (= *sitis*, Fr.).

β. Below dark ferruginous ochreous.

*ananta ochracea*, Evans. Sikkim—Dawnas. R. (high).



F26. *Neptis*.—The Sailers and Lascars. (Plate 22)—*contd.*

(*mackwoodi* and *suffusa*, Tyt. from the Karens and Bhamo respectively appear to be aberrations).

γ. Above darker and all markings much darker. Below darker. H termen more crenulate.

*ananta namba*, Tyt. Manipur. Nagas. R. (low elevations).

16 (15). Unh basal costal streak narrow and with a streak base cell. Upf discal spots in 1 and 2 conjoined or very close; apical spots coalesced and extending into 4 on both sides. F termen even, not concave in middle.

α. Below markings more or less whitish, especially the discal band H. Upf spots in 1 and 2 separated by the black vein.

*miah miah*, M. (45-60). The Small Yellow Sailer. Sikkim—Assam. NR.

β. Below markings ochreous; marginal markings more obscure. Upf discal spots in 1 and 2 completely conjoined.

*miah nolana*, Druce. Burma. R.

17a (10c). Unf with pale costal spots above end cell streak, internal to the upper discal spots.

17 (18a). Upf discal spots complete, with a spot in 4; inner edge sub-marginal line highly bent in the middle.

α. Above all markings narrow, brown. Below entirely brown with prominent yellow or whitish bands.

*ebusa fuliginosa*, M. (55). The Fuliginous Sailer. Karens—S. Burma. R. (= *thamala*, M.).

β. Upf apical markings whitish and below all markings whitish. *ebusa ebusa*, Fd. In BM from South Nicobars. VR.

18a (17). Upf no discal spot in 4; inner sub-marginal pale line absent.

18 (19a). Upf discal spot in 3 narrow and not to v4, immediately above and coalesced to spot in 2, not produced towards cell streak.

α. Above markings white.

*antilope melba*, Evans. (55). The Variegated Sailer. Sikkim. VR.

β. Above markings yellow.

*antilope antilope*, Leech. (60). Naga Hills. VR.

19a (18). Upf discal spot in 3 reaches v4.

19 (20a). Upf discal spot in 3 not curved in so as to meet cell streak. Above markings yellow.

*cydippe kirbariensis*, Tyt. (80). The Chinese Yellow Sailer. Naga Hills. VR.

20a (19). Upf discal spot in 3 meets cell streak, forming a hockey stick.

20b (22). Upf discal spot in 3 fills base 3.

20 (21). Above markings yellow.

*aspasia*, Leech. (85). The Great Hockeystick Sailer. Nagas. N. Burma. VR.

21 (20). Above markings white. Below greenish yellow.

*manasa*, M. (65). The Pale Hockeystick Sailer. Sikkim. S. Shan States. VR.

22 (20b). Upf discal spot in 3 not to base 3. Below rich ochreous brown.

α. Above markings white.

F26. *Neptis*.—The Sailers and Lascars. (Plate 22)—contd.

*nycteus nycteus*, DeN. (60). The Hockeystick Sailer. Sikkim. VR.

β. Above markings yellow.

\**nycteus phesimensis*, Tyt. Nagas. VR.

23a (10b). Upf cell streak extending into base 3.

23b (25a). Unf with pale costal spot or spots above end cell streak, internal to the apical discal spots.

23 (24). Unf these spots small and confined to costa.

α. Above markings white.

\**narayana narayana*, M. (60-70). The Broadstick Sailer. Kulu—Kumaon. R.

β. Above markings yellow.

*narayana nana*, DeN. Sikkim—Manipur. R. (= *naga* Tyt.).

24 (23). Unf these spots continued to the cell streak.

α. Large; markings orange yellow above.

*radha radha*, M. (70-80). The Great Yellow Sailer. Kumaon—Assam. R.

β. Small; markings pale yellow above.

*radha asterastilis*, Ober. (60-70). Momeit, N. Burma, Dawnas. VR.

25a (23b). Unf no costal spots internal to the apical discal spots.

25 (26a). Unf spot in 1 well separated from the spot in 2. Above markings broad, white to pale yellow. Below pale yellow green.

α. Above markings pale ochreous in WSF, nearly white in DSF. Below pale greenish ochreous, sub-marginal band F and discal and sub-marginal bands H faint.

\**zaida zaida*, Db. (65-75). The Pale Green Sailer. Murree—Kumaon. R. (DSF = *paliens*, Fruh. and *pallida*, Tyt.).

β. Above markings pale ochreous, but central band uph nearly white. Below yellow brown, all bands clearly defined.

*zaida bhutanica*, Tyt. Sikkim, Bhutan. R.

γ. Above markings orange yellow. Below red brown, markings sharply defined.

*zaida manipuriensis*, Tyt. Manipur. R.

δ. Above markings pale orange yellow. Below greenish ochreous, all markings absent other than the two pale bands H, the inner of which is black edged outwardly.

*zaida drummondi*, Tyt. S. Shan States. R.

Above markings nearly white: upf spot base 3 absent. Below olive, sub-marginal bands etc., faint.

*zaida putoia*, nov. Dawnas. R.

26a (25.) Upf lower discal spots coalesced, not even separated by veins. Above markings yellow.

26 (27). Below bands pale greyish ochreous, with a violet tint; uph dark area between the pale bands nearly as wide or wider than the bands.

α. Above bands wide. Below paler and all markings with their edges suffused.

*viraja kanara*, Evans. (55-75). The Yellowjack Sailer. S. India—Orissa. NR.

β. Above bands narrower and below darker and all markings with sharply defined edges.

## F26. Neptis.—The Sailers and Lascars. (Plate 22)—contd.

*viraja viraja*, M. Kumaon—Burma. NR.

27 (26). Below all bands ochreous. Upf cell streak never bearing a black mark on its upper edge, but instead a slender black edged, yellow bar. H discal black band narrower below than above. Uph dark margin bears a narrow ochreous line; black discal band further from margin. Upf outer sub-marginal yellow line always traceable, inner line comparatively broad and the inner dark line irregular.

α. Larger, paler, yellow above. Upf irregular dark line bordering the yellow discal area much more irregular in middle than elsewhere. Below markings pale; termen not fuscous edged.

*heliodore sattanga*, M. (45-50). The Burmese Lascar. Assam—N. Burma. NR. (=camboja, M.: kuhasa, DeN.).

β. Smaller, darker, orange above. Upf dark line bordering yellow discal area zigzagged throughout. Below markings dark, well defined, termens narrowly fuscous.

*heliodore dorelia*, But. (40-45). S. Burma. NR.

28a (1a). F v 10 ex 7. Above markings yellow; all small.

Hordonia Group.

28b (32). Below not striated with fuscous brown lines.

28c (31). Upf lower discal spots conjoined.

28d (30). Upf 2 narrow sub-marginal pale lines; uph narrow ochreous line on the dark margin.

28 (29). Upf the 2 narrow sub-marginal lines yellow, curved in middle. Below markings ill-defined, pale; unh at base several short brown dashes, termen ochreous, bearing 2 narrow dark lines.

\**paraka*, But. (45-50). The Perak Lascar. Assam—Burma. NR.

29 (28). Upf the 2 narrow sub-marginal pale lines greyish, not conspicuously curved in the middle. Below markings dark, sharply defined, no basal brown dashes. Unh dark discal band and dark margin bear prominent, well defined greyish ochreous lines.

α. Upf the sub-marginal lines united.

*dindinga assamica*, M. (40-45). The Greylined Lascar. Assam—N. Burma. VR.

β. Upf sub-marginal lines separate.

*dindinga dindinga*, But. (45-50). S. Burma. VR.

30 (28d). Upf a single ochreous sub-marginal line. This line broad, not bent in middle; uph an ochreous line on the dark margin. Below washed pinkish; unf veins black at apex, margin broad ochreous. Unh some dark dots at base cell; dark discal band more heavily black edged on inner side than on outer.

*aurelia*, Stg. (25-40). The Baby Lascar. Assam—Burma. R.

31 (28c). Upf discal spots in 1 and 2 well separated. Upf postdiscal yellow band narrow and ochreous line on the dark margin.

*paona*, Tyt. (45-50). Tytler's Lascar. Naga Hills. VR.

32 (28b). Below more or less brown striated. Very pronounced seasonal variation.

α. Upf marginal lines highly zigzagged throughout.

*hordonia sinuata*, M. (45-50). The Common Lascar. Ceylon.

C.

F26. *Neptis*.—The Sailers and Lascars. (Plate 22)—*contd.*

$\beta$ . Upf marginal lines much less zigzagged, but often in WSF prominently so in the middle.

\**hordonia hordonia*, Stoll. S. India. Dun—Burma. C. (= *plagiota*, M.).

$\gamma$ . Upf sub-basal pale band white.  
*hordonia cnacalis*, Hew. Andamans. NR.

F27. *Cyrestis*.—The Map Butterflies. (Plate 23).

1 (2a). F apex broadly truncate and produced below v6. Above white with narrow pale ochreous lines and a broad brown border.

a. Upf dark border rather pale brown and costa pale brown.

\**periander periander*, F. (40-50). The Little Map. Shan States.

R.

$\beta$ . Upf dark border much darker brown, costa whitish. Above ochreous lines broad and darker, especially at tornus H.

*periander binghami*, Martin. Dawnas—S. Burma. NR.

2a (1). F apex not truncate.

2 (3a). H. apex rounded and termen F even.

a. Smaller. Typical form white, with fine lines, bases and margin not darkened.

*cocles cocles*, F. (50-60). The Marbled Map. Orissa. Sikkim—Burma. R. (= *horatius*, WM. & DeN.).

v. *earlei*, Dist. Bases and margin darkened, but interspersed with white patches. R.

v. *natta*, Swin. Bases and margin darkened and very slightly interspersed with white patches.

$\beta$ . Large. Typical form white, bases and margin not darkened.

*cocles formosa*, Fd. (60-70). Andamans. R.

\*v. *andamanica*, WM. & DeN. Bases and margins darkened and interspersed with white. R.

3a (2). Apex H and tornus F truncate.

3b (5). Above ground colour white or pale yellow.

3 (4). Upf outer thin discal line meets black border at v5 and just below v2; inner discal line has no dark patch at its upper end. Upf 3 thin basal lines parallel. Prominent ochreous area at tornus F and H and this area on F bears 2 small prominent black dots. Above ground colour white.

*nivea nivalis*, Fd. (50-60). The Straight Line Map. S. Burma. NR. (= *atosia*, Swin.).

4 (3). Upf outer thin discal line runs from dorsum to v7 and inner discal line has a small dark patch at its upper end. Upf the fine basal lines irregular. Upf no prominent tornal ochreous area. Upf postdiscal dark band straight.

a. Upf apical and terminal dark area distinctly bluish grey. Ground colour never yellow.

*thyodamas indica*, Evans. (50-60). The Common Map. S. India. NR.

$\beta$ . Upf apical and terminal dark areas narrower and dark brown. Above usually white in ♂ and pale yellow in ♀.

F27. *Cyrestis*.—The Map Butterflies. (Plate 23)—contd.

*thyodamas ganescha*, Koll. Kashmir—Kumaon. NR. (= *afghana*, Mart.).

γ. Upf apical and terminal dark areas much broader and brown. Nearly always white above.

\**thyodamas thyodamas*, Bdv. Sikkim—Burma. C. (= *nobilior*, Mart.).

δ. Above all markings much heavier; upf 2 discal lines joined by the dark area in 4. Upf tornal orange areas much more extensive and darker.

*thyodamas andamanica*, WM. Andamans. NR.

5 (3b). Above deep rich fulvous; below yellow. Above markings much as in No. 4, but with a complete row of postdiscal lunular brown spots.

*tabula*, DeN. (55-60). S. Nicobars. NR.

F28. *Chersonesia*.—The Maplets. (Plate 23).

1a (3). H tornus produced and termen with a short tail at v4. Above fulvous with dark brown narrow lines.

1 (2). F 6th line from base, as all the others, quite straight throughout and parallel to the rest.

\**risa*, Db. and Hew. (40-45). The Common Maplet. Kumaon—Burma. NR. (= *transiens*, Mart.).

2 (1). F 6th line from base sinuous, much curved at upper end. *rahria rahrioides*, M. (35-45). The Wavy Maplet. Manipur—Burma. R.

3 (1a). H tornus not produced and termen not tailed. In ♀ termen very convex. Upf 6 lines nearest base paired and filled in darker between pairs; 7th line waved as 6th in No. 2.

*peraka*, Dist. (30-35). The Rounded Maplet. S. Burma. R.

F29. *Pseudergolis*.—The Tabby. (Plate 23).

Above golden brown; upf 4 dark lines in cell, 3 dark lines beyond and between the last two a row of black spots. Below dull brown, more or less glazed violet, especially at apex unf. Apex F truncate.

\**wedah*, Koll. (55-65). The Tabby. Kulu—Burma. NR.

F30. *Hypolimnas*.—The Eggflies. (Plate 23).

1 (2a). Unh prominent black costal spot mid 7. ♂ above dark indigo blue, prominent large discal white patch on each wing on a shot blue area. Normal ♀ tawny with white banded black apex upf.

\**misippus*, L. (70-85). The Danaid Eggfly. Ceylon, India, Baluchistan, Burma. C. Andamans and Car Nicobar. R. (= *dio-cippus*, Cr.).

♀ v. *alcippoides*, But. Upf white on disc. VR.

♀ v. *inaria*, Cr. Upf white banded black apex absent. VR.



F30. *Hypolimnias*.—The Eggflies. (Plate 23)—contd.

2a (1). Unh no prominent black costal spot mid 7.

2 (3). Unh broad white or whitish marginal band. ♂ above as No. 1, but white patches suffused blue in DSF. ♀ normally with a prominent row of sub-marginal white spots and a broad white margin uph; upf in WSF 2 bluish white spots end cell; DSF with a blue shot discal band. ♂ ♀ below in WSF with a prominent white discal band on either wing.

\**bolina*, L. (70-110). The Great Eggfly. Ceylon, India, Baluchistan, Burma, Andamans. C. Nicobars. VR. (= *avia*, *liria*, *F.*: *jacintha*, *Drury*, *charybdis*, *But.*: *curiosa*, *Swin.*: *egna*, *luctuosa*, *ornamentalis*, *subviolacea*, *Fr.*). Small WSF = *bolina*: large DSF = *jacintha*.

♀ *v. melita*, Cr. Upf a series of suffused, rather small, whitish spots beyond cell and a dark obscure fulvous patch near tornus; uph discal area suffused, golden tawny. S. Burma. VR.

♀ *v. iphigenia*, Cr. Above postdiscal spots absent and marginal markings obsolete. Upf a row of large white discal spots beyond cell, outwardly obscurely blue edged; prominent tawny tornal area. Uph large white discal area, inwardly obscurely blue edged and outwardly very obscurely tawny edged. S. Burma. VR.

3 (2). Unh no broad pale marginal band. ♂ above dark olive brown, glossed blue on costa and termen F; postdiscal white spots F and H; upf ill-defined whitish streaks in 4, 5 and 6 beyond cell. ♀ as ♂ but all upf except basal third shot rich satiny blue.

*antelope anomala*, Wall. (85-95). The Malayan Eggfly. Car Nicobar. NR.

F31. *Yoma*.—The Lurcher. (Plate 23).

Above dark brown with a broad yellow discal band across both wings. Below DSF leaf-like; WSF with a very pale yellow discal band as above.

\**sabina vasuki*, Doh. (75-85). The Lurcher. Burma. Andamans. NR. (= *atomaria*, *sabulosa*, *Fr.*).

F32. *Rhinopalpa*.—The Wizard. (Plate 23).

♂ above rich tawny fulvous with a broad black border F and the upper part H; lower part H with black sub-marginal spots. Below rich dark brown with very narrow silver lines and fulvous markings and a complete row of sub-marginal spots F and H. ♀ paler, bases darker ochreous brown and a broad yellow discal band.

\**polynice birmana*, Fruh. (70-80). The Wizard. Assam—Burma. R. (= *fulva*, *Fd.*).

F33. *Doleschallia*.—The Autumn Leaf. (Plate 23).

Above rich tawny fulvous with a very broad black apex bearing a tawny band from the costa beyond the cell. Below leaf-like.



F33. *Doleschallia*.—The Autumn Leaf. (Plate 23)—*contd.*

*a.* F termen between vs 7-9 convex or straight. Upf yellow spot in 4 parallel to termen, narrow, diffuse, just extending into 3 and 5 and sometimes very narrowly joined to the costal band along v5.

*bisaltide ceylonica*, *Fruh.* (75-85). The Autumn Leaf. Ceylon. R.

*β.* F termen as in *a.* Upf yellow spot in 4 smaller, confined to 4 and not joined to costal band. Paler.

*bisaltide malabarica*, *Fruh.* S. India. R.

*γ.* F. termen concave between vs 7-9. Upf discal spot in 4 variable, but better formed and more quadrate.

*bisaltide indica*, *M.* Sikkim—Burma. NR. (= *polibete*, *Auct.:* *argyrioides*, *basalis*, *cingara*, *nimbata*, *continentalis*, *Fr.*).

*δ.* F termen between vs 7-9 straight. Upf 3 white apical spots instead of 2. In ♀ costal band broadly joined to spot in 4, which extends into 5.

\* *bisaltide merguiana*, *Evans.* Mergui. NR. (= *pratipa*, *Auct.*).

*η.* F termen between vs 7-9 convex. Above as *γ* but black apex extends broadly along 3 to base 3. F tornus much produced and termen more concave in middle.

*bisaltide andamana*, *Fruh.* Andamans, NR. Car and Central Nicobars. VR. (probably a separate race).

F34. *Kallima*.—The Oakleafs. (Plate 23).

1a (4). Upf dark basal area extends beyond end cell. Base F and all—some shade of blue or green.

1 (2-3). Upf discal band blue or bluish white, a dark bar defining end cell, another just beyond in 4 and a bar from v3-v1.

*a.* Darker, in WSF ♂ lower part of the band darker than the apical part.

*philarchus philarchus*, *Wd.* (85-110). The Blue Oakleaf. Ceylon. NR. (= *mackwoodi*, *M.*).

*β.* Paler. Band more uniformly coloured. ♀ much greener.

*philarchus horsfieldii*, *Koll.* (85-110). S. India. R. (= *double-dayi*, *wardi*, *M.*).

2 (1-3). Above band orange.

*a.* DSF very pale and the sub-marginal dark lines very prominent on H.

*inachus huegeli*, *Koll.* (85-110). The Orange Oakleaf. Pachmarhi. Kashmir—Kumaon. NR. (= *atkinsoni*, *boisduvali*, *buckleyi*, *huttoni*, *ramsayi*, *M.*).

*β.* DSF not much paler than the WSF, which is darker.

*inachus inachus*, *Bdv.* Sikkim—Assam. NR. (= *foliacea*, *marmorata*, *siccifolia*, *uredinophora*, *Fr.*).

*γ.* Blue areas with a rich steely blue sheen and the orange band much more richly coloured.

*inachus limborgi*, *M.* Burma. NR.

3 (1-2). Above discal band white.

\* *albofasciata*, *M.* (85-110). The White Oakleaf. Andamans. R.

4 (1a). Upf dark basal area not extending beyond end cell, which is defined by a black bar, but no black markings beyond. Band

F34. *Kallima*.—The Oakleaves. (Plate 23)—*contd.*

bluish white. Upf black apex broader than the dark basal area.  
Uph dark ochreous brown.

*alompra*, M. (95-110). The Scarce Blue Oakleaf. Sikkim—  
Dawnas. R. (= *knyvetti*, DeN.).

F35. *Precis*.—The Pansies. (Plate 24).

1a (6). Upf a black spot or variegated ocellus in 2.

1 (2a). Uph a black spot in 2. Above bright yellow; ♂ prominent blue patch uph about base 6.

a. Smaller.

*hierta hierta* F. (45-55). The Yellow Pansy. Ceylon. India.  
Baluchistan. VC.

β. Larger and brighter.

\**hierta magna*, Evans. (50-60). Sikkim—Burma. Andamans.  
C.

2a (1). Uph a variegated ocellus in 2.

2 (3a. 5). Upf and uph a variegated ocellus in 2 and 4. Above bright shining blue, which in uph extends nearly to base along costa.

a. Smaller. Below paler.

\**orithya swinhœi*, But. (40-55). The Blue Pansy. Ceylon. India.  
Baluchistan, VC. (= *patenas*, Fr.).

β. Larger, below darker.

*orithya ocyale*, Hub. (45-60). Sikkim—Burma. VC. Straggler  
on Car Nicobar. (= *isocratia*, Hub. : *phycites*, Fr.).

3a (2. 5). Uph single large variegated ocellus. Upf 2 variegated ocelli.

3 (4). Above dark brown with a number of lemon yellow spots F.

a. Small and dark.

*lemonias vaisya*, Fruh. (45-55). The Lemon Pansy. Ceylon—S.  
and Central India. C.

β. WSF as last. DSF very variable, often rosy below.

*lemonias persicaria*, Fruh. Kashmir—Kumaon. C. (= *aenaria*,  
Fr.).

γ. Larger.

\**lemonias lemonias*, L. (50-60). Sikkim—Burma. C. (= *aonis*,  
Cr.).

4 (3). Above rich fulvous. Uph ocellus very large, from v4 to  
above v7. DSF leaf-like below and wings much produced. WSF  
ocellated below and wings rounded.

\**almana almana*, L. (60-65). The Peacock Pansy. Ceylon,  
India, Burma, Andamans. C. (= *asterie*, L.).

β. Smaller.

*almana nicobariensis*, Fd. (50). Car Nicobar. C.

5 (2. 3a). Upf and uph complete row of ocelli, of which those in 2  
and 4 are variegated. Above grey, with dark brown lines.

\**atlites*, L. (55-65). The Grey Pansy. Ceylon, India, Burma,  
Andamans. Central Nicobars. NR. (= *laomedia*, L.).

6 (1a). Above no prominent ocelli, pale to dark brown, with  
darker brown bands.

F35. *Precis.*—The Pansies. (Plate 24)—*contd.*

- a.* Small and dark.  
*iphita pluvialis*, *Fruh.* (55-65). The Chocolate Soldier.  
 Ceylon,—S. and Central India, Maldives. C.  
*β.* Small and pale.  
 \* *iphita siccata*, *Stich.* (55-65). Kashmir—Kumaon. C. (= *hopfferi*, *Mosch.*).  
*γ.* Usually larger and darker. DSF may be variegated.  
*iphita iphita*, *Cr.* (55-80). Sikkim—Burma. VC.

F36. *Vanessa.*—The Tortoiseshells, etc. (Plate 24).

- 1a (4a). H termen not produced and angled at v4. Upf black apex, bearing 3 conjoined apical and 4 sub-marginal white spots.  
*Atalanta* Group.  
 1 (2a). Above pinkish red, base golden brown. Upf 3 central black spots on the red area.  
*cardui*, *L.* (55-70). The Painted Lady. Ceylon, India, Burma.  
 C. Straggler on Andamans.  
 2a (1). Above dark brown with a red central band upf and a black spotted red marginal band uph.  
 2 (3). Upf red band compact and not divided by dark spots; all apical spots white and always a white spot in 3. Unf dorsal dark area more extensive.  
*atalanta*, *L.* (55-65). The Red Admiral. Shinghar, Zhob. VR.  
 3 (2). Upf red band divided by dark spots: costal apical spot reddish: no white spot in 3.  
*a.* Dark. Uph termen black. Upf 2 lower central black spots confluent; red discal band deep crimson and only a very thin red line behind the black spot in cell.  
*indica nubicola*, *Fruh.* (55-65). The Indian Red Admiral. Ceylon.  
 NR.  
*β.* Transition between last and next.  
*indica pholæ*, *Fruh.* (55-65). S. India. NR.  
*γ.* Dark brown areas above with a golden gloss. Upf discal band much wider and paler; lower of the 2 central spots detached. Uph termen red. Unf bluish spots end cell large and prominent.  
 \* *indica indica*, *Herbst.* Kashmir—N. Burma. C.  
 4a (1a). H termen produced at v4.  
*Urticae* Group.  
 4b (7a). F dorsum markedly concave before tornus, which is produced, rendering termen highly concave. H tailed at v4 and tornus produced; apex prominently truncate.  
 4 (5a). Above very dark indigo blue, with a broad postdiscal blue band F and H.  
*a.* Upf discal band joined to the blue spot at end cell and not or only obscurely continued to the white apical dots. Uph the black spots on the outer edge of the discal band large and merged to the black marginal area.  
*canace haronica*, *M.* (60-70). The Blue Admiral. Ceylon. NR.  
*β.* Upf discal band not joined to the blue spot at end cell, but continued to the white apical dots. Black spots on the outer edge

F36. *Vanessa*.—The Tortoiseshells, etc. (Plate 24)—*contd.*

of the discal band clear and separated from the black margin. Small and discal band greenish blue.

*canace viridis*, Evans. (60-70). S. India. NR.

γ. As last, but the band is blue and the spots on the border H are minute.

\**canace himalaya*, Evans. (60-70). Chitral—Kumaon. NR.

δ. As last, but larger and the blue band wider.

*canace canace*, L. (65-75). Sikkim—N. Burma.

5a (4). Above tawny with black spots. Unh central silver dash or comma.

5 (6). Upf no spot base cell. Uph black discal spots never blue centred. Spring forms are much yellower above and have yellowish undersides. Summer forms tawny red above and with slaty brown underside, plain in the ♀, marbled and variegated in the ♂.

a. Spring form (*pallida*) similar to typical *egea*, Cr. from E. Europe and W. Asia, but upf the black discal spots in 2 and 3 are absent and the yellow border spots uph are larger: much paler than any other Indian form. Summer form (*balucha*) very different to the spring form and to the summer form (*i-album*, Esp.) of *egea*: bright dark red with well defined, comparatively small markings and small yellow spots on the dark border uph. In both forms the cell spots are quite separate upf as in *egea*: in other Indian forms they are coalesced, though sometimes separate in *undina*.

*egea balucha*, nov. (45-50). The Eastern Comma. Baluchistan. NR. (DSF = *pallida*, nov.).

β. Spring form (*undina*) dusky dull yellow brown, yellow border spots small. Summer form (*chitralica*) larger and more heavily marked than *balucha*: uph yellow border spots larger: near the C. Asian *interposita*, Stg., which is redder, has redder border spots uph and a more variegated underside.

*egea undina*, GG. (45-50). Chitral. NR. (WSF = *chitralica*, nov.).

γ. Spring form? Summer form as *chitralica*, but larger and with very small border yellow spots uph. In this and the succeeding forms, the silver mark unh is more C-shaped, while in the preceding forms it is L-shaped.

*egea kashmira*, nov. (50-65). Kashmir, Ladak. NR.

δ. Spring form (*cognata*) yellow and very heavily marked; uph yellow border spots large and conjoined. Summer form (*inica*) differs from *kashmira* in having the red colouring above variegated with yellow, the black markings are larger and the yellow border spots uph are equally small.

*egea cognata*, M. (50-65). Nathia Gali—Kumaon. NR. (WSF = *inica*, nov.).

η. Uniform fulvous red with comparatively narrow markings: margin uniform, not outwardly ashy as in other races. Upf no yellow spots, instead a sub-marginal red band inwardly bordered by a dark brown broken postdiscal band.

*egea agnicula*, M. (50-65). Nepal—Bhutan. R. (= *tibetana*, El.).

6 (5). Upf a black spot base cell: uph with postdiscal black spots more or less blue centred.

F36. *Vanessa*.—The Tortoiseshells, etc. (Plate 24)—*contd.*

*c-aureum*, L. (45-50). The Chinese Comma. Loimwe, S. Shan States. VR.

7a (4b). F dorsum straight. H termen never produced to the same extent, tooth at v2 projects as far as the tornus; apex not or only slightly truncate.

7b (11a). Costa F, dorsum H and palpi not bearing long erect coarse black hairs. Above tawny with black spots.

7 (8a). Upf white apical spots completely enclosed by the black apex; always black spot base 2. Uph large quadrate black spot mid costa, broadly white edged on either side.

*l-album*, Esp. (65-75). The Comma Tortoiseshell. Chitral—Kashmir. R. (= *vau-album*, Den and Schiff.).

8a (7). Upf the tawny ground colour always extending up to the white apical spots; no black spot base 2 (except in No. 8). Uph basal two-thirds black and except for an area below the costa shaded golden scales; no white patches below costa.

8b (10). Uph the sub-marginal row of blue centred black spots not inwardly fuscous bordered. Wings broad and square.

8 (9). Termen F rounded at apex and only slightly produced at v6. Above very prominent yellow patches; uph black spot mid 1 extending to base 2; uph tawny postdiscal area narrow.

\**ladukensis*, M. (45-55). The Ladak Tortoiseshell. Ladak—Sikkim. NR.

9 (8). Termen F concave below the apex. Upf black spot mid 1 extending to base 2.

*urticee rizana*, M. (50-60). The Mountain Tortoiseshell. Safed Koh. Chitral—Sikkim. R.

10 (8b). Uph the sub-marginal row of blue centred black spots inwardly fuscous bordered. Wings narrow and more produced; termen F concave below apex and tornus more produced F and H.

a. Upf fuscous inner border to the sub-marginal spots no wider than the tawny area between it and the discal spots in 2 and 3.

*cashmirensis cashmirensis*, Koll. (55-65). The Indian Tortoiseshell. N. Waziristan. Safed Koh. Chitral—Kulu. C.

β. The fuscous border wider and the yellow areas more developed.

*cashmirensis aesis*, Fruh. Simla—Sikkim. C.

11a (7b). Costa F, dorsum H and palpi with long black coarse hairs, which are erect.

11b (13). Above tawny with black spots, similar in general appearance to Nos. 7-10; uph with a large black spot mid costa, as in No. 7, but tawny edged both sides or yellow outwardly.

11 (12). Mid and hind legs brown. Above darker; uph black sub-marginal band irregular, wider in middle, bearing outwardly a prominent narrow blue line.

*xanthomelas ferveescens*, Stich. (60-70). The Large Tortoiseshell. Baluchistan. N. Waziristan. Chitral—Kumaon. NR.

12 (11). Mid and hind legs black. Above paler, with yellow patches more developed. Uph sub-marginal black band narrower and of equal width throughout, the blue line absent or only represented by a few blue scales here and there; the black border with



F36. *Vanessa*.—The Tortoiseshells, etc. (Plate 24)—*contd.*

broad diffused yellow markings on either side. Below more uniform and outer half not conspicuously paler.

\**polychloros fervida*, *Stdjss.* (60-70). The Blackleg Large Tortoiseshell. Chitral—Murree. R.

13 (11b). Above rich dark maroon with broad pale yellow margins, internal to which there is a row of small blue spots. Upf 2 pale yellow costal spots.

\**antiopa yedanula*, *Fruh.* (70-80). The Camberwell Beauty. Chumbi Valley, Sikkim. VR.

F37. *Araschnia*.—The Mongol. (Plate 24).

Above dark brown with a pale yellow discal band and sub-marginal line both completely broken in middle. Upf with 3 sub-apical yellow spots and narrow yellow lines in cell.

\**prorsoides dohertyi*. *M.* (50-55). The Mongol. Manipur. N. Burma. R.

F38. *Symbrenthia*.—The Jesters (Plate 24).

Dark brown with yellow bands arranged rather as in *Neptis*.

1a (3a). Unf lower half of cell with brown markings, in particular a long bar right across cell from costa; below markings ferruginous brown rather than black.

1 (2). Below a straight brown line from nearer base v1 H across cell to just before mid costa, joining a similar straight bar on F from dorsum to apex; this bar darker than the other markings.

\**hippochlus khasiana*, *M.* (45-55). The Common Jester. E. Ghats—Kulu—Burma. C. (= *lucina*, *Cr.*: *daruka*, *M.*).

2 (1). Below all markings equally dark and darker than in No. 1; the dark bar across F and H not continuous: net-work of markings very intricate. Upf sub-marginal dark markings from tornus narrow and continued to the central dark markings, not confined to a dark spot in 1.

\**hypatia chersonesia*, *Fruh.* (45-55). The Intricate Jester. Merqui. VR.

3a (1a). Unf lower half of cell and a band of the ground colour H free from dark marking. Below all markings consist of black spots of an irregular shape, except for a series of blue or green sub-marginal ocelli and tornal markings H.

3b (5). Unf always a black spot base 1 under the spot in the cell near the base.

3 (4). Unf no black streak running above the costal vein from spot at extreme base cell to above the 2nd spot in the cell; also counting from the yellow centred cell spot there are 6 spots on the costa.

a. Above fulvous markings very broad; apical, cellular and lower discal areas often joined; H black discal band curved, often incomplete and tawny margin often reaches nearly to the apex. Below ochreous brown, dark markings reduced. Unf inside fine



F38. *Symbrenthia*.—The Jesters. (Plate 24)—*contd.*

marginal line, there are several narrow parallel lines at apex and middle; unh postdiscal band without prominent metallic green centres and sub-marginal dark line from tornus to v4 enlarged and blue centred in 3.

*hypselis brabira*, M. (40-55). The Himalayan Jester. Kashmir—Kumaon. NR. (= *lilacea*, Hew. : *asthala*, Sivokana, M.).

β. Above fulvous markings very variable, cellular yellow area may be joined in the ♀ to the apical, but lower discal area always separate. Below variegated ochreous and whitish, markings prominent and fully developed. Unf inside fine marginal line there is an ill-formed ocellus at the apex and in the middle. Unh metallic green centres to the postdiscal band large and prominent; sub-marginal discal band from the tornus—v4 of equal width, continuous and centred metallic green.

\* *hypselis cotanda*, M. (45-55). The Spotted Jester. Kumaon—Burma. NR. (= *sinis*, DeN. : *assama* Fr.).

4 (3). Unf a black streak from the black spot at the extreme base cell running above cell to above the 2nd spot; also counting from above the pale centred spot in the cell there are 7 costal spots. Unh sub-marginal metallic green band from v4 to tornus sharply broken at v2, followed by a tornal metallic blue spot, broadly black edged. Above markings narrow, well separated. Upf always an ochreous line at apex. Uph no yellow sub-marginal line at tornus.

a. Below ochreous, uniform.

*niphanda hysudra*, M. (50-60). The Bluetail Jester. Kashmir—Kumaon. R.

β. Below pinkish. Unf central postdiscal markings centred metallic green.

*niphanda niphanda*, M. Sikkim—Assam. R.

5 (3b). Unf no spot base 1. Above as No. 4, but markings broader, paler in middle and darker edged. Unf no black streak at base costa as in No. 4, but a costal spot between the two basal spots making in all 9 costal spots. Below pinkish, markings broad and ochreous edged. Unf central postdiscal markings rounded as in No. 3, not elongated as in No. 4 and never metallic green. Unh green or blue postdiscal ocelli much smaller and with yellow rings; submarginal blue or green line from tornus to v4 continuous, but portion in 2 and 3 conical.

*silana*, DeN. (50-60). The Scarce Jester. Sikkim—Manipur. VR.

F39. *Argynnis*.—The Fritillaries. (Plate 24).

Above tawny with black spots; below usually with silver markings.

1a (10a). F upper apex cell opposite well beyond origin v3 : v10 ex cell. (*clara* may be aberrant).

Aglaia Group.

1b (8a). H precostal well curved forward.

1c (6a). Unh silver stripes, not rounded spots.

F39. *Argynnis*.—The *Fritillaries*. (Plate 24)—*contd.*

1 (2a). Unh ochreous and olive brown.

a. Darker. ♂ F v2 unswollen and apex F hardly produced.  
♀ with white banded dark blue apex upf.

*hyperbius taprobana*, M. (65-75). The Indian *Fritillary*.  
Ceylon. NR.

β. ♂ F v2 swollen; apex F not produced. ♀ as ♂, duller and  
bases darker, no blue and white apex.

*hyperbius castetsi*, Ober. (65-80). Travancore, Palni Hills. NR.

γ. ♂ as last. ♀ normal, with white banded dark blue apex  
upf, but much darker and duller than usual, the white band narrow  
and the apex only slightly produced.

*hyperbius hybrida*, Evans. Nilgiris. NR.

δ. ♂ F v2 unswollen. ♀ with white banded, dark blue apex.  
Apex F much produced in ♂ and ♀ termen concave in middle.

\* *hyperbius hyperbius*, L. (70-85). Central Provinces. Mount  
Abu. Baluchistan. Chitral—N. Burma. NR. (= *niphe*, L. :  
*aruna*, M.).

2a (1). Unh dark green.

2b (5). Unh all markings silvery. In ♂ vs 2 and 3 inflated  
and distorted (v1 to a lesser extent also) and their origins pushed  
right back.

2 (3a). Unh basal silver stripes continued to costa; the discal  
silver band straight.

a. Smaller. Uph blue marginal suffusion reduced especially in  
♂.

*childreni sakontala*, Koll. (75-90). The Large Silverstripe.  
Chitral—Kumaon. NR.

β. Larger and more richly coloured, uph the marginal blue  
suffusion broad and prominent.

*childreni childreni*, Gray. (85-100). Kumaon—N. Burma. NR.  
(= *binghami*, Ob.).

3a (2). Unh no silver marking in 8; discal bands very  
sinuate.

3 (4). Unh 4 silver bands as in No. 2, excluding the marginal  
band.

\* *kamala*, M. (65-75). The Common Silverstripe. Safed Koh.  
Chitral—Kumaon. C. (= *cnidia*, Fd.).

4 (3). Unh only 2 silver bands, one discal and one through  
end cell.

*maia pasargades*, Fruh. (65-75). The Western Silverstripe.  
Chitral—Gilgit. NR. (= *pandora*, Den and Schiff.).

5 (2b). Unh only the broken discal band is silver; band through  
mid cell is ferruginous brown. ♂ F vs 1 and 2 only swollen.

*laodice rudra*, M. (65-75). The Eastern Silverstripe. Assam—  
N. Burma. NR.

6a (1c). Unh with silver spots, not stripes; dark green.

6 (7). Unh upper 3 discal spots, at right angles to the costa  
and not in line with the 4th spot; 2 small silver spots just inside  
the upper two; usually 3 basal spots in line; a discal incomplete  
row of silver centred ferruginous spots. Unf silver spots in 5 and  
6 well away from the termen. ♂ F v2 slightly swollen.

a. Darker and more richly coloured.

F39. *Argynnis*.—The Fritillaries. (Plate 24)—contd.

\**adippe jainadeva*, M. (55-70). The Highbrown Silverspot. Safed Koh. Chitral—Kumaon. NR. (= *mohmandorum*, Fr.).

β. Much paler.

*adippe pallida*, Evans. Ladak. R.

7 (6). Unh upper 3 discal spots inclined to the costa, parallel to termen and in line with 4th spot; no spots just inside the upper two; usually only 2 basal spots, but a third minute one may be present at base cell. Unf no silver spots in 5 and 6 away from the margin, but the uppermost spots of the sub-marginal series are silver from 4 or 5 to costa. ♂ no veins swollen.

a. Large and richly coloured. Normal ♀ tawny.

*aglaia ashretha*, Evans. (60-65). The Dark-green Silverspot. S. Chitral, up to 8,000 feet. NR. (= *yopala*, Fruh.).

♀ v. *purpura*, Evans. Completely suffused very dark purple above. R.

β. Smaller paler.

*aglaia vitatha*, M. (55-60). N. Chitral—Kashmir, over 8,000 feet. R. (= *valesinoides*, Reuss).

8a (1b). H precostal straight and rather obscure.

8 (9). Unh ochreous, bearing very large silver spots, in particular a very large spot end cell and one above it as well as one below; postdiscal series small, brown ringed, silver spots, much bowed out in middle. H termen angled at v4.

a. Unh spot base 3 silver and second spot from base in 2 yellow. Smaller and redder, wings more rounded.

*lathonia lathonia*, L. (50-55). The Queen of Spain. Baluchistan. NR.

β. Unh spot base 3 yellow and second spot from base in 2 silver.

\**lathonia issæa*, Db. (50-60). The Queen of Spain. Safed Koh. Chitral—N. Burma. C.

9 (8). Unh dark green with silver streaks; discal series of long silver streaks complete and no postdiscal row. F v 10 ex cell or ex 7.

a. Large and richly coloured. ♀ dark greenish with ochreous spots on H.

\**clara clara*, Blanch. (50-65). The Silverstreak. Garhwal—Kumaon. R.

β. Smaller, paler ochreous, but dark markings broader. ♀ as ♂.

*clara manis*, Fruh. (45-50). Chumbi Valley. C.

10a (1a). F upper apex cell not produced, opposite origin v3. All of small size and fly at high elevations. F v10 ex 7 except in *gemmata*.

Pales Group.

10b (14a). Unh a white or silver spot mid cell.

10c (13). H apex rounded. Unh markings brilliant silvery, spot end cell very long, nearly or quite reaching the postdiscal row of small spots. Apex F pointed.

10 (11a). Unh marginal silver markings long, narrow, of equal width throughout and nearly reaching postdiscal spots. All markings narrow and elongated.

**F39. Argynnis.—The Fritillaries. (Plate 24)—contd.**

*altissima*, El. (33-36). The Mountain Silverspot. Sikkim—Bhutan. R.

11a (10). Unh marginal silver markings short, not of even width, not nearly up to the postdiscal spots.

11 (12). Small. Unh marginal silver markings inwardly rounded.

*eugenia mackinmoni*, DeN. (35-40). The Brilliant Silverspot. Shipki. Nila and Baspa Valleys. R.

12 (11). Large. Unh marginal silver markings conical, inwardly pointed.

\* *gemmata gemmata*, But. (45-50). The Gem Silverspot. Chumbi Valley. NR.

13 (10c). H apex pointed and costa straight. Unh markings not prominently silver and spot end cell not elongated. Apex F rather pointed.

α. Small and with small markings.

\* *pales sipora*, M. (35-40). The Straightwing Silverspot. Chitral—Kumaon. NR. (= *baralacha*, M.).

β. Large and pale; markings unf much reduced.

*pales korla*, Fruh. (40-45). Kashmir—Lahoul. R. (= *generator*, Auct.).

γ. Small and dark with much darker and heavier markings.

*pales eupales*, Fruh. (35-40). Chumbi Valley, Sikkim. NR.

14a (10b). Unh black spot mid cell. Apex F and H rounded.

14 (15). Unh spot end cell and marginal spots silver. Below variegated with chestnut brown. Unh marginal spots separated by equally wide ferruginous spots at end veins.

α. Smaller. Above markings smaller and better defined.

\* *jerdoni chitralensis*, M. (35-40). Jerdon's Silverspot. Chitral. R.

β. Larger. Above markings wider.

*jerdoni jerdoni*, Lang. (40-45). Kashmir. R. (= *cashmirensis*, M.).

15 (14). Unh all spots white and ground colour uniform yellow; marginal white spots continuous, only separated by veins; row of postdiscal spots bordered by a narrow pale yellow band. Above pale bright tawny with very small markings.

*hegemone*, Stg. (38-42). The Whitespot Fritillary. Hunza. Chitral—Ladak. VR.

**F40. Melitaea.—The Small Fritillaries. (Plate 24).**

1 (2a). Unh no yellow or red bands, dull pale ochreous brown, bands concolorous with ground, markings obscure. Above yellow; upf discal band prominent; uph no discal band.

*shandura*, Evans. (45-50). The Shandur Fritillary. Chitral. VR.

2a (1). Unh with yellow or red bands.

2b (6a). Unh no red or yellow band at base, a series of black spots instead. Above veins not markedly black.

2 (3a). Below the bands, etc., nearly obsolete. Above a somewhat fiery red with reduced markings.

F40. *Melitaea*.—The Small Fritillaries. (Plate 24)—*contd.*

*saxatilis lunulata*, Stg. (45). The fiery Fritillary. Gilgit, Hunza. R.

3a (2). Unh and above strongly marked.

3 (4a). Unh red spots of outer band in 2 and 3 inwardly convex, not black edged but immediately followed by 2 black bars appertaining respectively to the postdiscal and discal series of black markings, far removed from the outer black edging of the central red band. Above ♂ uniform tawny, F produced: ♀ with yellow discal patches: upf sub-marginal spots united with marginal line to form a lunular border: uph sub-marginal spots linear and may be obsolete, but discal series prominent. Unh white. Outer spine of clasp very short, inner spine long ending at same level.

*trivia perseæ*, Koll. (34-44). The Desert Fritillary. Baluchistan. N.W.F. Province. N. W. Punjab. Chitral. NR.

4a (3). Unh black markings of discal series in 2 and 3 either absent or distinctly nearer to the outer edging of the central band than to the postdiscal markings. ♂ F rounded at apex. Uph discal spots absent or ill-developed. Upf postdiscal band less regular, spots in 2 and 3 being shifted in. Outer spine of clasp longer than inner.

4 (5). Unh black markings of the postdiscal series in 2 and 3 inverted V-shaped, ground colour white. Unf postdiscal band of black spots diminishing posteriorly. Outer spine of clasp stout and notched below the tip.

a. Above closely resembling the *trivia* and *didyma* forms flying with it: sub-marginal spots detached, just touching the terminal black line: postdiscal spots absent or faint on H. Unf apex and mid costa broadly whitish. Lower spine of clasp comparatively long, stout.

*robertsi robertsi*, But. (36-46). The Baluchi Fritillary. Baluchistan. NR.

β. Above much darker due to black markings being much broader. Upf traces of central spots between the discal and postdiscal series: sub-marginal spots continuous and postdiscal very nearly so. Unf only extreme end apex pale. Lower spine of clasp as short as in *didyma*, but much stouter.

*robertsi lutko*, nov. (36). Chitral. R.

5 (4). Unh black markings of postdiscal series straight or nearly so in 2 and 3. Outer spine of clasp very long and simple, inner spine very short. Unh pale yellow.

a. Above pale tawny: postdiscal spots well developed: marginal series as in *robertsi*.

*didyma dodgsoni*, GrS. (40-52). The Redband Fritillary. Baluchistan over 6,000 ft. R.

β. Very variable. Above varies from tawny to red: sub-marginal spots conjoined to the marginal line forming lunules or a regular band: postdiscal series of spots may be more or less conjoined to the sub-marginal series. Uph discal series present or absent. ♀ very similar to ♂.

*didyma mixta*, Evans. (34-45). Chitral 4—8,000 ft. NR.

γ. Much larger, more constant and more strongly marked. ♂ above bright dark red. ♀ very different: upf yellow with extensive



**F40. Melitaea.—The Small Fritillaries. (Plate 24)—contd.**

black scaling and a complete postdiscal band: uph costal half red, dorsal half black. Uph postdiscal band connected to the marginal band along each vein.

\**didyma chitralensis*, M. (42-50). Chitral over 6,000 ft. NR. (= *chitralipluria*, Ver.).

6a (2b). Unh with a basal red band. Upf veins more or less black: postdiscal band present.

6 (7). Unh veins not dark: margin beyond the outer red band white, as ground colour, bearing outwardly a narrow series of dark spots only just separated from the dark terminal line by the white area: central pale area uniform, the discal and postdiscal black lines contiguous to the central and outer red bands respectively. Upf markings sharply defined and well developed. Upper spine of clasp bifid.

a. Above rather dark red.

*minerva balba*, Evans. (35-40). The Pamir Fritillary. S. Chitral over 9,000 ft. (Ashreth, Madaglasht). NR.

β. Above rather bright yellow.

*minerva balbina*, Tyt. N. Chitral (Shandur, Shahjenali). NR.

7 (6). Unh veins dark: margin beyond the outer red band divided into two portions by the sub-marginal dark line, inner band paler: discal dark line divides the central pale area into two portions, outer being paler. Upper spine of clasp simple.

a. Above bright reddish to tawny, markings broad. Below more uniform, pale areas between and beyond the red bands being nearly the same shade of pale yellow.

*arcesia balbita*, M. (40-45). The Blackvein Fritillary. Chitral—Kashmir. NR.

β. Smaller. Above much paler and markings ill-developed. Unh the pale band through mid cell, outer discal and inner marginal bands silvery: inner discal band yellow, outer marginal band reddish.

*arcesia sindura*, M. (34-40). Ladak—Kumaon at high elevations. NR. (= *amoenua*, Fd.).

γ. Similar to *sindura* but more heavily marked. F more pointed than in other races.

*arcesia thibetana*, Fawcett (34-40). Sikkim at very high elevations—Thibet. NR.

δ. Nearer *balbita* in size: more heavily marked than other races. Above sub-marginal band nearly or quite coalesced to the dark margin. Below as *sindura* but more heavily marked.

*arcesia sikkimensis*, M. (40-45). Sikkim, Chumbi Valley. NR. (= *orientalis*, Elwes).

**F41. Cupha.—The Rustic. (Plate 25).**

a. Upf discal area reddish ochreous, not yellow; black apex devoid of yellow spots or they are vestigial; black spot in 1b not prominently larger than the spots in 2 and 3. Below markings in cells, small, black, separate and clearly defined.

*erymanthis placida*, M. (50-60). The Rustic. Ceylon. C.



**F41. Cupha.—The Rustic. (Plate 25)—contd.**

β. As last, but upf discal area yellow. Unf markings as in last, but unh they are obscure and pale ferruginous.

*erymanthis maja*, Fruh. S. India. NR.

γ. Upf always yellow spots on the black apex; black spot in 1b much larger than the spots in 2 and 3. Below markings in cells pale and conjoined.

*\*erymanthis lotis*, Sulz. (50-65). Mussoorie—Burma. C.

δ. As last, but above base F and all H much darker. Larger. Upf outer edge dark basal area defined by an inclined, not a vertical straight line in 2.

*erymanthis andamanica*, M. (55-65). Andamans. NR.

η. Uph space between sub-marginal lines paler.

*erymanthis nicobarica*, Fd. Nicobars. C.

**F42. Atella.—The Leopards. (Plate 25).**

Above spotted very much as in *Argynnis*, but unf a very prominent tornal spot in 1b.

1 (2). F, excluding bar end cell, with 4 dark lines within cell; markings rounded.

*\*phalanta, Drury*. (50-60). The Common Leopard. Ceylon. India, Baluchistan, Burma. C. Straggler on Central Nicobars.

2 (1). F, excluding bar end cell, with 5 or 6 dark lines in cell; markings more linear and above more or less shot violet.

a. Upf apex very broadly black, width =  $\frac{1}{4}$  wing.

*alcippe ceylonica*, Manders. (40-50). The Small Leopard. Ceylon. R.

β. Above veins black. Generally darker and below all markings well developed.

*alcippe mercea*, Evans. (40-50). S. India. R.

γ. Above veins not black. Upf fully spotted, postdiscal line between vs. 2-4 slender and in an even curve.

*alcippe alcippoides*, M. (35-45). Sikkim—N. Burma. NR.

δ. Upf terminal dark border not thickened at all at apex and postdiscal line zigzagged throughout; darker, but markings more reduced and linear.

*alcippe burmana*, Evans. (45-50). Karens—S. Burma. NR.

η. Upf as γ, but all markings heavier, especially in ♀. Below markings all prominent as in β. Apex F less produced.

*alcippe andamana*, Fruh. (40-50). Andamans. NR.

ξ. Paler with reduced markings. Below with a well marked whitish transverse band.

*alcippe fraterna*, M. Central and South Nicobars. R.

**F43. Issoria.—The Vagrant. (Plate 25).**

a. Much paler with paler, narrower, markings.

*sinha pallida*, Evans. (55-65). The Vagrant. Dun—Kumaon. NR.

β. Darker and more heavily marked.

*\*sinha sinha*, Koll. (55-65). Bengal, Orissa, Sikkim—Burma. NR.

F44. *Cynthia*.—The Cruiser. (Plate 25).

α. ♂ dark fulvous. ♀ white band only shows in 5 and 6 uph; above rather pale bluish green.

*erota asela*, M. (90-100). The Cruiser. Ceylon. NR.

β. ♂ bases dark, centre paler, yellowish. ♀ white band as in last; above rather dark olive brown.

\**erota saloma*, Swin. (95-110). S. India. NR.

γ. Seasonal forms very sharply, marked. ♀ discal band from costa to v2 uph; bases green, marginal area H broad ochreous brown.

*erota erota*, F. (90-110). Sikkim—Burma. NR. (*circe*, Fawcett: *pura*, Swin.: *auricoma*, *triocellata*, Fr.).

δ. As last but ♂ much paler. ♀ as DSF of last.

*erota pallida*, Stg. (90-100). Andamans. C.

F45. *Cirrochroa*.—The Yeomen. (Plate 25).

1 (2a). Above dark brown with a pale yellow discal band F and H and 2 outer rows of conjoined yellow spots; the discal band upf ends at v4 and there are 2 yellow spots beyond in 5 and 6. ♂ upf with a dull ochreous band on either side of the basal half of vs 5 and 6.

\**fasciata*, Fd. (45-55). The Branded Yeoman. Karens—S. Burma. NR. Andamans. VR. (= *flavobrunnea*, GrS.).

2a (1). Above tawny fulvous.

2b (4a). Unf dark bar end cell double. Below white discal band broad and a distinct yellow or brown broad irregular band inside it, as well as a distinct sub-marginal zigzag yellow or brownish band.

2 (3). Upf the 3 upper black discal spots in an absolutely straight line. Unh the white discal band expands widely to costa above v6. Apex F more or less truncate and produced. ♂ upf a yellow band along vs 5, 6 and 7, also just visible on vs 6 and 7 upf.

α. Upf black apex narrow; in ♂ sub-marginal dark line separate below v6; in ♀ the black margin absorbs the sub-marginal dark line, but is quite separate from the postdiscal zigzag line. Considerable seasonal variation.

\**aoris aoris*, Db. (80-90). The Large Yeoman. Sikkim—Assam. NR. (= *abnormis*, *jiraria*, Swin.: *stramentica*, Fr.: *humida*, Brooks).

β. Upf black apex broad; in ♂ the dark sub-marginal line is only separate below v4 and in ♀ the dark apex and margin absorb the whole of the postdiscal line.

*aoris olivacea*, DeN. N. Burma—Dawnas. R.

3 (2). Upf the 2nd of the 3 upper discal spots out of line. Unf white band broad and of very nearly equal width, expanding very slightly to costa above v7; band may be absent. Apex F only slightly produced and not truncate. ♂ upf a band along vs 6 and 7; no band upf.

α. Paler.

\**tyche mithila*, M. (65-75). The Common Yeoman. Sikkim—Burma. C.

β. Darker, especially at bases above and generally below,

F45. *Cirrochroa*.—The Yeomen. (Plate 25)—*contd.*

*tyche anjira*, M. (70-85). Andamans. C.

4a (2b). Unf dark marking end cell single.

4b (6a). Upf postdiscal zigzag line always more or less separate from the black marginal area. Unf discal band narrow and expands to costa. Uph 2nd of upper 3 discal spots out of line.

4 (5). Uph costa dusky from white spot mid costa to apex. Above dark fulvous. Upf apex and margin broad black. Below pale discal band variable, may be regular and narrow, expanding to costa or may be broken into irregular spots. Upf ♂ a brand along vs 5, 6; none uph.

α. Darker and markings, especially at margin, heavier.

*thais lanka*, M. (60-70). The Tamil Yeoman. Ceylon. NR. (= *cognata*, M.).

β. Paler and less heavily marked.

*thais thais*, F. S. India. NR. (= *swinhoei*, But.: *relata*, M.).

5 (4). Uph costa not dusky. Smaller and much paler above, ochreous rather than fulvous; all markings small, but uph the narrow black discal line present and continuous. Below very pale; discal band narrow, but never broken into spots. ♂ upf no brand; uph brand along vs 5 and 6.

*surya*, M. (50-60). The Little Yeoman. Dawnas.—S. Burma. C.

6a (4b). Upf no trace of any sub-marginal or discal line except in space 1; apex and margin broad black. Unh discal band narrow.

6b (8). Above veins on disc black; uph 2nd of upper 3 discal spots out of line. Upf no prominent pale band. Unf discal band very narrow at dorsum and expanding widely above v2.

6 (7). Apex F produced. Upf a prominent ochreous spot on the black apex. Uph discal black spots small; margin black and the 2 sub-marginal lines narrow. No brand in ♂.

\**emalea*, Guer. (70-80). The Malay Yeoman. Mergui—S. Burma. R. (= *bajadeta*, M.).

7 (6). Apex F not produced; no ochreous spot on the black apex. Uph discal black spots very large and sub-marginal dark lines broad. ♂ Uph obscure brand along vs 5 and 6.

*nicobarica*, WM. and DeN. (55-65). The Nicobar Yeoman. Great Nicobar. C.

8 (6b). Above vs not black. Upf broad yellow discal band from mid costa to tornus, which unf is white. ♂ upf and uph brand along vs 5 and 6.

*orissa*, Fd. (60-65). The Banded Yeoman. Tavoy—S. Burma. R.

F46. *Terinos*.—The Assyrian. (Plate 25).

Above suffused rich purple; uph terminal third rich yellow. ♂ outer half upf and apex uph with dark velvet brown modified scales.

\**clarissa lioneli*, Fruh. (70-80). The Assyrian. S. Burma. VR.

F47. *Cethosia*.—The Lacewings. (Plate 25).

1 (2a). Unf all markings in cell right across it and beyond cell an irregular pale straight band continuous on F and H.

a. Upf discal row white horseshoes complete from 2 or 3 to 6. ♀ varies from red as in ♂ to moss green.

\**biblis tisamena*, *Fruh.* (65-90). The Red Lacewing. Sikkim—Burma. C. (= *thebana*, *GrS.* : *mixta*, *Fr.*).

β. Upf white quadrate patch in 3 instead of a horseshoe. ♀ upf nearly black; uph greenish white. Below postdiscal dark line broken into pairs of dots in each interspace.

*biblis andamana*, *Stich.* (85-100). Andamans. C.

γ. As last, but smaller and upf white markings less prominent. Below bands more heavily black edged, postdiscal dark line continuous.

*biblis nicobarica*, *Fd.* Nicobars. C.

2a (1). Unf one of the black bars in the cell only reaches half way across it from the costa. Below no straight pale narrow band across both wings.

2b (4). Unh with a row of black spots beyond end cell on a more or less regular curve.

2 (3). Below broad ochreous sub-marginal band, as broad as the black border. Upf discal row of large black oval spots.

a. Upf no white band 3-6. ♂ above black, dusky ochreous about base below cell; lower part uph bluish white; ♀ greenish blue.

*nietneri nietneri*, *Fd.* (80-95). The Tamil Lacewing. Ceylon. NR.

β. Upf white band 3-6. ♂ ♀ above tawny; ♀ paler, black markings large and diffuse; unf red area replaced by dusky ochreous.

*nietneri mahratia*. (80-95). S. India. NR.

3 (2). Below sub-marginal ochreous band narrow, much narrower than the black border. Upf prominent white band beyond cell. Upf discal black spots small. ♂ tawny. ♀ upf black, base below cell dusky tawny turning to bluish white; uph bluish.

\**cyane*, *Drury.* (85-95). The Leopard Lacewing. Orissa. Mussoorie—Burma. NR.

4 (2b). Unh row of black spots beyond cell sharply angled out in the middle. Above tawny with broad black borders and apex upf, which are practically unmarked; a cream band upf. Unh prominent white discal band, base red, ochreous between the white band and the margin.

*hypsea hypsina*, *Fd.* (85-95). The Malay Lacewing. S. Burma. R.

F48. *Byblia*.—The Joker. (Plate 25).

Above bright tawny, black markings in ♂, fuscous in ♀, end veins black. Unh white basal and central band, discal and marginal black band with small white spots and a row of large white spots between.

\**ilithia*, *Drury.* (45-55). The Joker. Ceylon. S. India—Central Provinces. NR. (= *simplex*, *But.*).

F49. *Ergolis*.—The Castors. (Plate 25).

1 (2). F termen deeply concave between vs 3-5. Above discal line just beyond cell single and regular, angled on F at v5.

a. Above uniform. Small. ♂ uph vs 5 and 6 shining white and discal black lines do not run through them to costa.

*ariadne minorata*, M. (45-50). The Angled Castor. Ceylon. C.

β. As last, but larger.

*ariadne indica*, M. (50-55). S. India—Bengal. C.

γ. Larger and more variegated above in DSF. Above veins blacker. Uph vs 5 and 6 not conspicuously white and the discal lines run to the costa.

*ariadne pallidior*, Fruh. (55-60). Mussoorie—Burma. C.

2 (1). F termen only faintly concave between vs 3-5. Above discal line just beyond cell double and highly irregular. Unf ♂ brand enters cell.

a. Above uniform. ♂ below upper part of disc F and H dark velvet brown, obliterating the bands. Larger, darker; richly coloured in WSF.

*merione taprobana*, Wd. (55-60). The Common Castor. Ceylon. C.

β. As last, smaller and duller.

*merione merione* Cr. (50-55). S. India—Bombay. C. (= *nicevillei*, Fr.).

γ. ♂ DSF with variegated yellow bands; below upper part of disc on H not darkened and bands clear. Small.

*merione tapestrina*, M. (45-55). Central Provinces—Orissa. Kashmir—Kumaon. C.

δ. As last, but larger and DSF never much variegated.

\* *merione assama*, Evans. (55-60). Sikkim—N. Burma. C.

η. Smaller. DSF variegated. Unh pale and bands faint, especially towards dorsum.

*merione pharis*, Fruh. (50-55). Karens—S. Burma. C.

F50. *Laringa*.—The Dandies. (Plate 25).

1 (2). ♂ above deep ultramarine blue, no pale band. ♀ smoky brown with paler discal band, interrupted mid F.

*castelnaui*, Fd. (50-55). The Blue Dandy. Katha. Dawnas—S. Burma. R.

2 (1). ♂ with band above. ♀ ochreous.

a. ♂ above shining dark plumbeous, paler discal band, interrupted mid F. ♀ ochreous brown, with paler discal band, all covered with small brown strigæ.

\* *horsfieldii glaucescens*, DeN. (50-60). The Banded Dandy. N. Shan States—Dawnas. R.

β. ♂ above indigo blue, discal band pale blue; base and cell F and broad sub-marginal band H black. ♀ ochreous brown, with clear yellow discal band.

*horsfieldii andamanensis*, DeN. Andamans. NR.



**F51. Pareba.—The Yellow Coster. (Plate 25).**

Yellow with a black border F and H bearing yellow spots; veins black. ♂ with bar end cell F. ♀ very variable, black spots in cell and on disc, which may be conjoined to a continuous band; the whole wing may be covered with black scales.

a. ♂ Small.

*vesta anomala*, Koll. (45-65). The Yellow Coster. Kulu—Kumaon. NR.

β. Larger.

\* *vesta vesta*, F. (50-70). Sikkim—Assam. NR.

γ. Black border broader. Below white areas absent. ♀ with upf a sub-marginal series of short red brown arrows.

*vesta sordice*, Fruh. (50-70). Burma. R.

**F52. Telchinia.—The Tawny Coster. (Plate 25).**

Tawny with black spots. H with a black border bearing white spots.

\**violæ*, Fab. (50-65). The Tawny Coster. Ceylon. India. C.



## G. ERYCINIDÆ

## G. Erycinidæ.—The Erycinids. Key to Genera.

1 (2a). Palpi porrect and enormously long, like a beak or snout.  
*Libytheinæ*. Single genus *Libythea*, E. The Beaks. (Plate 26).

2a (1). Palpi small, do not project beyond face.

*Riodinæ*.

2b (4a). H. precostal from origin of v8.

2 (3). H vs. 6 and 7 from upper end of cell; 3 and 4 from lower end cell. F lower end dev at origin v3. H not lobed. Eyes smooth.  
*Zemeros*, Bdv. The Punchinello. (Plate 26.)

3 (2). H vs 6 and 7 forked after end cell; v3 from before end cell. F end dev after origin v3. H produced and lobed. Eyes hairy.

*Dodona*, Hew. The Punches. (Plate 26). (= *Balonca*, M.).

4a (2b). H precostal from after origin v8; vs 6 and 7 forked after end cell. v3 from before end cell. F end dev after origin v3.

4b (7). H v8 long, ends beyond origin v6; v7 to apex.

4c (6). No ♂ brand.

4 (5). H cell long and narrow at base; scv and mv convergent at base. Eyes hairy.

*Abisara*, Fd. The Judies. (Plate 26). (= *Sospitia*, Hew.: *Sosibia*, Archigenes, Fr.).

5 (4). H cell short and broad at base; scv and mv parallel to v8, sharply angled opposite precostal. Eyes smooth.

*Taxila*, Db. The Harlequins. (Plate 26).

6 (4c). ♂ F dorsum much bowed, covering a brand-apex on a nacreous area below costa. ♂ ♀ dev H at right angles to vs 4 and 6, not inclined as usual.

*Laxita*, But. The Red Harlequin.

7 (4b). H v8 very short, ends before end cell; v7 very short also and ends long before the apex. Base cell as in No. 5. Eyes hairy.

*Stiboges*, But. The Columbine. (Plate 26).

## KEY TO SPECIES.

G1. *Libythea*.—The Beaks. (Plate 25).

1a (4a). Upf prominent ochreous streak in cell from base.

1 (2a). Upf ochreous spot in 1b. All ochreous markings very broad. H costa concave before apex and termen concave below apex.

*celtis*, Fuess. (45-50). The European Beak. Chitral. NR.

2a (1). Upf no ochreous spot in 1b. H costa and termen straight on either side of apex.

2 (3). Upf ochreous spot beyond cell streak quadrate, separate or only joined to cell streak by a narrow neck.

G1. *Libythea*.—The Beaks. (Plate 25)—*contd.*

*a.* Upf cell streak divided in 2 before end cell; all apical spots white. Uph white quadrate spot mid costa.

*lepita lepitoidea*, M. (45-50). The Common Beak. Ceylon. S. India. NR.

*β.* Upf cell streak not divided; lowest apical spot ochreous. Uph rarely with white quadrate spot mid costa.

*lepita lepita*, M. Kashmir—N. Burma. C.

3 (2). Upf ochreous spot beyond cell oval, joined to spot end cell, making an even edged continuous club shaped streak.

*a.* Above ochreous markings F and H narrow; upf apical spots white. Uph band not to dorsum.

*myrrha rama*, M. (45-55). The Club Beak. Ceylon. C.

*β.* Above ochreous markings slightly wider. Upf usually 2 apical spots white and lower 2 ochreous.

*myrrha carma*, Fruh. S. India. C.

*γ.* Above ochreous markings wide. Upf all apical spots yellow. Uph band to dorsum.

\**myrrha sanguinalis*, Fruh. Kulu—Burma. C.

4a (1a). Upf no ochreous streak from base cell.

4 (5). Upf dark brown, white spot end cell and mid 2 as well as the usual apical spots; uph narrow macular white band. In ♀ the markings above are tinged ochreous.

*narina rohini*, Mar. (50-55). The Whitespotted Beak. Assam—Burma. R. (= *libera*, DeN.)

5 (4). Above pale blue with fuscous margins, unspotted except at apex. In typical form the fuscous margins and apex upf are broad, with the apical spots sharply marked.

*geoffroyi alompra*, M. (50-60) The Blue Beak. S. Burma. R.

*v. hauxwelli*, DeN. Upf the fuscous margin and apex narrow; apical white spots obscure, but all markings showing through from below. R.

G2. *Zemeros*.—The Punchinello. (Plate 26).

Above purple brown with small white spots. In DSF the white apical spots are enlarged.

\**flegyas indicus*, Fruh. (35-40). The Punchinello. Mussoorie—Burma. VC. (= *allica*, F.; *confucius*, M.).

G3. *Dodona*.—The Punches. (Plate 26).

1a (6a). Unh 2 small black spots just before the apex.

1b (5). Upf spotted, not striped.

1 (2a). Upf an ochreous bar end cell, as well as a bar in cell and beyond. No tail. Above dark brown with prominent ochreous spot on upf.

\**durga*, Koll. (30-40). The Common Punch. Larram Pass, Chitral. Kashmir—Nepal. VC.

2a (1). Upf no ochreous bar end cell.

2b (4). Above dark brown; uph markings obscure.

G3. Dodona.—The Punches. (Plate 26)—*contd.*

2 (3). H not tailed. Below markings narrow; unf costal spot and white bar end cell usually separate, if joined, costal spot shifted in. Unh pale bands narrow and of equal width.

a. Smaller and paler. Uph ♂ unmarked; unh markings very obscure. ♀ below markings yellow.

*dipœa nostia*, Fruh. (35-40). The Lesser Punch. Murree—Kumaon. R.

β. Larger, darker. Above markings ochreous. Below markings much more developed and white.

*dipœa dipœa*, Hew. (40-45). Sikkim—Assam. R.

γ. As last, markings very small. Below reddish ochreous, clear white narrow markings; unh lobe divided by an ochreous line.

*dipœa dracon*, DeN. N. Burma—Dawnas. VR.

3 (2). H tailed. Below markings broader; unf costal spot coalesced to bar end cell. Unh silver bar through mid cell and bar before apex wide, wider than the other markings.

a. Small. Upf in ♂ spots whitish.

*eugenes eugenes*, Bates. (35-40). The Tailed Punch. Murree—Kumaon. NR.

β. Larger and darker. ♂ upf spots ochreous and unf basal and central markings pale yellow.

*eugenes venox*, Fruh. (40-45). Sikkim—Assam. Dawnas. NR.

4 (2b). Uph reddish ochreous in ♂, yellow in ♀, with dark bands. Upf black, bases dark ochreous brown, large reddish ochreous spots in ♂, yellow in ♀. Below ferruginous brown.

\**egeon*, Db. (45-50). The Orange Punch. Nepal—Dawnas. R.

5 (1b). Upf striped, orange band in ♂, white in ♀; discal band from mid costa to tornus. Unf bands very obscure and highly irregular. No tail.

a. Paler. ♂ upf orange discal band very wide, wider than the black bands on either side. ♀ white band even edged to the spot in 1b, which is shifted out.

*oida phlegra*, Fruh. (40-55). The Mixed Punch. Mussoorie—Nepal. NR.

β. Darker. ♂ discal band narrow; ♀ irregular, spot in 1b small.

\**oida oida*, M. Nepal—Dawnas. NR.

6a (1a). Unh no black spots just below apex.

6 (7). Above orange banded. Below pale yellow with narrow black bands. No tail.

a. Upf base dark ochreous brown.

\**adonira adonira*, Hew. (40-50). The Striped Punch. Nepal. Sikkim. Assam. R.

β. Upf base black. Below dark bands are brown and unh with prominent silver stripes.

*adonira argentea*, Fruh. N. Burma. (Fruh). VR.

7 (6). Above very dark brown, with a white band across both wings; apex F white spotted. H with long tail.

a. Above white band narrow =  $\frac{1}{8}$ th wing and upf spot beyond cell small and obscure; marginal and sub-marginal spots diffused.

*henrici longicauda*, DeN. (40-50). The White Punch. Assam. VR.

G3. Dodona.—The Punches. (Plate 26)—*contd.*

β. WSF ♂ white band =  $\frac{1}{3}$ rd wing and upf spot beyond cell and spot in 3 sharp and prominent, remaining apical spots obscure. WSF ♀ white band very broad and white spot beyond cell extending to costa; uph base white striped. ♂ DSF bases F and H white striped. ♀ DSF almost entirely white.

\**henrici deodata*, Hew. Shan States.—S. Burma. R. (= *angela*, GrS.: *binghami*, M.).

## G4. Abisara.—The Judges. (Plate 26).

1a (4a). Upf prominent broad pale band from mid costa across end cell, or just beyond, to tornus.

1 (2a). H slightly produced at v4. Above dark brown, ♂ with yellow band upf, which is white in ♀.

\**fylla*, Db. (50-60). The Dark Judy. Mussoorie—Burma. C. (= *fyllaria*, Fr.).

2a (1). H with long tail at v4, tipped white. Above brown, band white.

2 (3). Upf no prominent white spot at upper end of postdiscal dusky pale line; discal band always slightly sinuous.

α. Small. Upf discal band narrow and constricted at ends.

*neophron neophronides*, Fruh. The Tailed Judy. Sikkim—Nepal. NR.

β. As last, but larger.

*neophron neophron*, Hew. (50-55). Assam—N. Burma. NR.

γ. Upf band not constricted at upper end.

*neophron gratius*, Fruh. Karens—S. Burma. NR. (= *chelina*, Fr.).

3 (2). Upf prominent white spot at upper end of postdiscal pale dusky band. Very like last.

α. Small and dark. Upf bands narrow and constricted at ends. *chela chela*, DeN. (45-50). The Spot Judy. Sikkim—Assam. VR.

β. Larger and paler. Upf discal band absolutely straight, expanding to costa and spreading slightly along costa, edges pale yellow, especially at costa; meets postdiscal band at v1. Uph marginal markings small and discal line evenly zig-zagged throughout.

\**chela kalawna*, Evans. (50-55). Kalaw, S. Shan States. VR.

4a (1a). Upf pale band, if present, well beyond end cell.

4 (5a). H with a long tail at v4, tipped white.

α. Upf and uph a narrow white discal band; upf dusky pale postdiscal line meets discal band at v1. Above bright maroon.

*savitri attenuata*, Tyt. (50). The Malay Tailed Judy. Manipur. VR.

β. Above dark ferruginous brown; upf 2 pale dusky parallel bands. Below bright ferruginous.

*savitri savitri*, Fd. (50-55). Lenya Valley, Mergui, VR.

5a (4). H may be angled or produced at v4, but never with a white tipped tail.

5b (8). Uph at most a single pale brown discal band. Above purple brown or maroon. Uph discal and postdiscal bands separate throughout.

G4. Abisara.—The Judges. (Plate 26)—*contd.*

5 (6a). Upf the discal and postdiscal bands, divergent to costa, never parallel.

α. WSF ♂ very uniform above, dark and brilliantly purple shot; discal band upf nearly straight. DSF smaller and only slightly different. ♀ band pale brown throughout.

*echerius prunosa*, M. (42-50). The Plum Judy. Ceylon—Palnis. C. (= *fraterna*, M.).

β. Smaller and paler, less brilliantly shot. DSF sharply marked and ♂ above outwardly paler; discal band upf more angled. ♀ often with upper part of the discal band white upf.

*echerius suffusa*, M. (40-50). Kanara—Himalayas. C.

γ. Unf discal band always white at upper end and angled in middle. ♀ upf discal band always white at upper end in WSF. Very variable and seasonal forms sharply marked as in last.

*echerius angulata*, M. (40-45). Assam—Karens. C. (= *jhana*, Fr.).

δ. As last but discal band upf is usually white at the upper end. Darker.

*echerius abnormis*, M. (40-50). Dawnas—S. Burma. C.

η. Much larger. ♂ upf and unf discal band never white, very broad unf. ♀ upf bands very broadly white at upper end and highly angled.

*echerius bifasciata*, M. (50-55). Andamans. NR.

6a (5). Upf discal and postdiscal bands parallel, never angled, though may be evenly curved. Unh discal band very even.

6 (7). ♂ above bands visible. ♀ unf bands separate throughout.

α. Larger. ♂ upf bands diffuse and not paler at upper end. ♀ upf bands broad, diffuse and white.

\**kausambi paionea*, Fruh. (42-46). The Straight Plum Judy. Manipur—Tavoy. R.

β. Smaller. ♂ upf bands prominently paler and wider at upper end. ♀ bands whiter.

*kausambi kausambi*, Fd. (42-46). Mergui.—S. Burma. R.

7 (6). ♂ above very dark rich purple brown, unmarked; Unf bands narrow, plumbeous. ♀ upf a sharply defined white pre-apical patch uniting the bands at their upper end.

*kausambioides*, DeN. (40-45). The Malayan Plum Judy. Mergui—S. Burma. R.

8 (5b). Above ochreous red; F and H with inwardly black edged narrow, macular, discal bands and subterminal white line. Uph no black spots at apex as usual.

*burnii*, DeN. (40-45). Burn's Judy. N. Burma. VR.

## G5. Taxila.—The Harlequins. (Plate 26).

1 (2). Unf discal band of inwardly black edged metallic blue spots in a regular line. Unh postdiscal band of similar spots regular and prominent. ♀ upf apical white patch crossed by ochreous veins.

**G5. Taxila.—The Harlequins. (Plate 26)—contd.**

*thuisto sawaja*, *Fruh.* (35-45). The Lesser Harlequin. Karens—S. Burma. NR.

2 (1). Unf spot in 3 of discal band pushed out. Unh postdiscal spots obscure. ♀ upf white apical patch diffuse and not crossed by ochreous veins.

\**haquinus fasciata*, *M.* (45-55). The Harlequin. Assam—Burma. NR. (= *moulmeinensis*, *Stg.*).

**G6. Laxita.—The Red Harlequins.**

♂ above dark brown, outer  $\frac{1}{3}$  F and apex H red; upf large white patch mid dorsum. ♀ upf outer  $\frac{1}{2}$  rosy red. Below rosy red with irregular metallic blue and black markings; bases yellow; apex F yellowish in ♂, rosy in ♀.

*telesia bouletti*, *Fruh.* (45-48). The Red Harlequin. S. Mergui. VR.

**G7. Stiboges.—The Columbine. (Plate 26).**

Above transparent white, with white spotted dark brown border. Apex F pointed in ♂, very rounded in ♀.

\**nymphidia*, *But.* (33-45). The Columbine. Bhutan—Burma. VR.



## H. LYCÆNIDÆ.

## H. Lycænidae.—The Blues. Key to Genera.

1a (5a). H. v8 abnormally short =  $\frac{1}{2}$  length of v1 F and only extends half way along v7 H; traces of pcv present. Antennæ club gradual, cylindrical. Eyes and palpi smooth. F vs 5 and 6 close and 7 and 6 from a point. H tornus rounded, no lobe or tail; termen may be produced at v4.

**Poritiinæ.** The Gems.

1 (2a). F vs 8 and 9 absent; 11 and 12 touch. ♂ uph tuft over brand in cell against scv just before middle and a 2nd tuft near base.

*Cyanooides*. DeN. The Emerald.

2a (1). F v8 or both 8 and 9 present; 11 and 12 anastomosed.

2b (4). F v9 absent.

2 (3). ♂ uph brand above v7 covered by an erectile tuft of yellow hairs; also a recumbent tuft of black hairs along the dorsum from near the base.

*Poritia*, M. The Gems (Plate 26).

3 (2). ♂ uph first brand and tuft as in last; a small obscure brand at end cell uph above origin v4, overlying which there is an insignificant tuft of recumbent dark hairs.

*Simiskina*, Dist. The Brilliants. (Plate 26). (= *Massaga*, Doh.).

4 (2b). F v9 present. No brand or tuft in the Indian form.

*Deramas*, Dist. The Bluejohn. (Plate 26). (= *Zarona*, DeN.).

5a (1a). H v8 normal, nearly or quite equal to v1 F; no signs of pcv.

5b (8a). Legs abnormal. Antennæ club gradual and cylindrical. Eyes smooth; palpi smooth and very long, third joint as long as second. F vs 11 and 12 separate; 7 and 6 forked; 5 mid 4-6; 9 present and 8 absent. H tornus rounded, no tail or lobe; termen may be produced at v4.

**Gerydinæ.** The Brownies.

5c (7). Legs very long, tarsi abnormal.

5 (6). Legs, first joint of tarsi elongated, compressed and flattened. ♂ upf v4 thickened at base (except one species); sub-anal abdominal tufts and clasps of ♂ very long and thin.

*Gerydus*, Bdv. The Brownies. (Plate 26). (= *Archæogerydus*, Fr.).

6 (5). Legs, 1st joint of tarsi elongated, but cylindrical.

*Allotinus*, Fd. The Darkies. (Plate 26). (= *Paragerydus*, Dist.).

7 (5c). Legs short, tarsi normal, but tibiæ outwardly incrassate. *Logania*, Dist. The Mottles. (Plate 26). (= *Malais*, Doh.).

8a (5b). Legs normal (except No. 9).

8b (36a). Antennæ club flattened and spatulate or hollowed beneath (except Nos. 8 and 9). F v5 mid 4-6; 8 absent, 9 present. H rounded or produced with or without a short filamentous tail at v2.

**Lycæninæ.** The Weak Blues.

8c (33a). F v7 from before end cell.

**H. Lycænidae.—The Blues. Key to Genera—contd.**

8d (16a). Below with dark markings from extreme base of wings : usually dark streak F and H and at least a streak along base of v8  
 H. *Androconia* present only in last 4 genera.

**Castalius Group.**

8e (13a). Eyes smooth.

8f (10a). Antennal club abnormal, gradual, cylindrical and not hollowed below. F vs 11 and 12 free. Tailless.

8 (9). Legs normal. Finely striated below.

*Spalgis*, M. The Apefly. (Plate 27).

9 (8). Forelegs with tibiae thickened. Spotted below.

*Taraka*, Doh. The Forest Pierrot. (Plate 27).

10a (8f). Antennal club normal. Tailed.

10 (11a). F vs 11 and 12 anastomosed.

*Talicaða*, M. The Red Pierrot. (Plate 27).

11a (10). F vs 11 and 12 free.

11 (12). F end v11 well beyond end cell.

*Castalius*, Hub. The Pierrots. (Plate 27).

12 (11). F end v11 opposite end cell.

*Tarucus*, M. The Blue Pierrots. (Plate 27).

13a (8e). Eyes hairy.

13 (14a). H tailed. F vs 11 and 12 free.

*Syntarucus*, But. The Zebra Blue. (Plate 27).

14a (13). H tailless, but tornal cilia produced.

14 (15). F vs 11 and 12 anastomosed.

*Azanus*, M. The Babul Blues. (Plate 27).

15 (14). F vs 11 and 12 free.

*Niphanda*, M. The Pointed Pierrot. (Plate 27).

16a (8d). Below no dark markings at extreme bases.

16b (26a). Eyes smooth or very slightly hairy in some species of *Polyommatus*.

**Cupido Group.**

16c (18a). H tornus evenly rounded. F costa highly arched. Tailless. No androconia.

16 (17). F vs 11 and 12 anastomosed.

*Pithecopa*, Hors. The Forest Quakers. (Plate 27).

17 (16). F vs 11 and 12 free.

*Neopithecopa*, Dist. The Quaker. (Plate 27).

18a (16c). H tornus angled. Generally with androconia in blue species.

18b (20a). F vs 11 and 12 anastomosed.

18 (19). Normally tailed : unh prominent tornal spots.

*Everes*, Hub. The Cupids. (Plate 27). (= *Tiora*, Evans).

19 (18). Tailless : unh tornal spots faint.

*Bothrinia*, Chap. The Hedge Cupid. (Plate 27). (= *Bothria*, Chap.).

*Note*.—*Cupido*, Schrank (= *Zizera*, M.) is a palaearctic genus differing from *Bothrinia* only in respect of the presence of androconia and habitat.

20a (18b). F vs 11 and 12 free.

20b (22a). Markings below not white edged.

20 (21). Unf 2 black dots on costa above v12. Tailed or tailless.

*Megisba*, M. The Malayan. (Plate 27). (= *Pathalia*, M.).

## H. Lycænidae.—The Blues. Key to Genera—contd.

- 21 (20). Unf no such dots. Tailless.  
*Lycænopsis*, Fd. The Hedge Blues. (Plate 27). (= *Cyaniris*, Dal.: *Celastrina*, Tutt.: *Notarhynchus*, Chap.: *Acytolepis*, Moorea, *Oreolyce*, *Monodontides*, *Toxopeus*).  
 22a (20b). Markings below white edged.  
 22b (25). Tailless.  
 22c (24). F origin v2 opposite origin v11 or v11 nearer base.  
 22 (23). Unh discal spot in 6 in line with spots in 5 and 7.  
 Habitat Palæarctic.  
*Polyommatus*, Lat. The Meadow Blues. (Plate 27). (= *Lycæna*, Auct. in error.: *Scolitantides*, Hub.: *Plebeius*, Klug.: *Aricia*, R. and L.: *Phengaris*, Doh.: *Agriades*, *Albulina*, *Hirsutina*, *Lattiorina*, *Vacciniina*, Tutt.: *Iolana*, *Turanana*, *Turania*, BB.: *Bryna*, Evans).  
 23 (22). Unh discal spot in 6 out of line. Habitat Oriental.  
*Chilades*, M. The Lime Blue. (Plate 27).  
 24 (22c). F origin v2 nearer base than is origin v11.  
*Zizeeria*, Chap. The Grass Blues. (Plate 27). (= *Zizula*, *Zizina*, Chap.: *Freyeria*, Courv.).  
 25 (22b). Tailed.  
*Euchrysops*, But. The Plains Cupids. (Plate 27). (= *Edales*, Swin.).  
 26a (16b). Eyes densely hairy.  
 Lampides Group.  
 26b (29. 30a). F vs 11 and 12 free.  
 26 (27a). H cilia prolonged so as to form 3 short tails at vs 1, 2 and 3.  
*Lycænesthes*, M. The Ciliate Blues. (Plate 27).  
 27a (26). H with long tail only at v2.  
 27 (28). Below with catenulated bands and some spots.  
*Catachrysops*, Bdv. The Forget-me-not. (Plate 27).  
 28 (27). Below marked with white lines, only tornal spots H.  
*Lampides*, Hub. The Peabue. (Plate 27).  
 29 (26b. 30a). F vs 11 and 12 free but connected with a short spur. H tailed.  
*Jamides*, M. The Ceruleans. (Plate 27).  
 30a (26b. 29). F vs 11 and 12 anastomosed.  
 30 (31a). H costa straight and apex sharp pointed. Tailless.  
*Orthomiella*, DeN. The straightwing Blue. (Plate 27).  
 31a (30). H costa rounded.  
 31 (32). Below spotted. Tailless.  
*Una*, DeN. The Una. (Plate 27).  
 32 (31). Below with lines or catenulated bands. H tailed or tailless.  
*Nacaduba*, M. The Lineblues. (Plate 27). (= *Prosotas* and *Catapyrops*, *Toxopeus*).  
 33a (8c). F v7 from end or beyond end cell.  
 Lycæna Group.  
 33 (34a). F vs 6, 7 stalked beyond end cell.  
*Thestor*, Hub. The Desert Coppers.  
 34a (33). F vs 6, 7 from end cell.  
 34 (35). F v 12 ends before end cell.

## H. Lycænidae.—The Blues. Key to Genera—contd.

*Lycæna*, F. The Coppers. (Plate 27). (= *Heodes*, Dalman. : *Chrysophanus*, Hub. : *Hyrcanana*, *Rumicia*, Tutt.).

35 (34). F v 12 ends after end cell.

*Heliphorus*, Guer. The Sapphires. (Plate 26). (= *Ilerda*, Db.).

36a (8b). Antennæ club gradual and cylindric (except No. 79).

36b (90). Body normal, slender, comparatively robust. Usually tailed and lobed, the tail being wider than in the *Lycæninæ*. F v8 usually absent and v9 usually present.

**Theclinae.** The Strong Blues.

36c (41a). Palpi hairy and H with a more or less well developed lobe at tornus and usually with a tail. F vs 11 and 12 free; 5 and 6 separate.

*Thecla* Group. The Hairstreaks.

36d (39a). F vs 8 and 9 absent.

36e (38). No tail.

36 (37). No lobe. No brand.

*Neolycæna*, DeN. The Persian Hairstreak.

37 (36). H lobed. ♂ upf an oval brand at upper end of cell, which distorts v7 at its base, causing it to rise well before the end of the cell; in ♀ vs 6 and 7 from a point.

*Callophrys*, Billberg. The Tailless Hairstreaks. (= *Satsuma*, Mur.).

38 (36c). Tailed. ♂ brand and venation as in last.

*Strymon*, Hub. The white line Hairstreaks. (Plate 26). (= *Thecla*, Auct.).

39a (36d). F v9 present, v8 absent. Nearly always a tail at v2.

39b (42a). F v7 ex 6.

39 (40a). H costa straight; F termen angled in middle; H lobed, tailless. ♂ uph brand base v7 and unf a tuft of hairs mid dorsum.

*Listeria*, DeN. Lister's Hairstreak. (Plate 26).

40a (39). H costa and F termen evenly convex. ♂ no brand.

40 (41). F v9 from half way along v7. H v3 from end cell. Tailed.

*Eusaspa*, M. The Water Hairstreak. (Plate 26).

41 (42). F v9 from much nearer base v7; H v3 from before end cell. All except one species tailed.

*Thecla*, F. The Hairstreaks. (Plate 26). (= *Aurotis*, *Zephyrus*, Dal. : *Ruralis*, L.).

42a (39b). F vs 7 and 6 from a point. Tailed.

42 (43). H tailed at v2 and costa rounded.

*Chaetoprocta*, DeN. The Walnut Blue. (Plate 26).

43 (42). H not tailed, produced and lobed at v1, above which dorsum is concave. Costa straight, apex right angled and termen concave below apex.

*Amblopala*, Leech. The Chinese Hairstreak.

44a (36c). Palpi smooth (except No. 78).

44 (45a). F v7 ends on termen in ♂ and ♀; 5 and 6 wide apart; 11 and 12 separate; 7 and 6 separate; H no lobe or tail, but wings may be highly angled. Eyes hairy.

*Curetis* Group. *Curetis*, Hub. The Sunbeams. (Plate 27).

## H. Lycænidae.—The Blues. Key to Genera—contd.

45a (44). F v7 ends on termen in 1st 2 genera only, but 5 and 6 are in those cases approximate.

45b (78a). Eyes smooth.

45c (50a). F vs 5 and 6 approximate; 11 and 12 separate; 7 and 6 separate. Tail never very long.

Amblypodia Group. The Oakblues.

45d (48a). H with a lobe and a tail at v1.

45 (46a). ♂ ♀ F vs 5 and 6 from a point. ♂ F vs 8 and 9 present and v7 ends on termen. ♀ v8 absent and v7 ends on costa.

*Iraota*, M. The Silverstreak Blues. (Plate 27).

46a (45). ♂ ♀ F vs 5 and 6 approximate, but not from a point.

46 (47). H tailed only at v1b. ♂ F v8 present, absent in ♀; ♂ ♀ v7 ends on termen.

*Horsfieldia*, Riley. The Leafblues. (Plate 27). (= *Amblypodia*, Auct.).

47 (46). H tailed at vs 1b, 2 and 3, tail at 2 longest. F vs normal, 8 absent and 7 ends on costa.

*Thaduka*, M. The Many tailed Oakblue. (Plate 27).

48a (45d). H no tail at v1b; usually lobe at tornus and a tail at v2. F venation normal as in last.

48 (49). H costa concave, apex pointed and more or less hooked. Tail spatulate.

*Mahathala*, M. The Falcate Oakblues. (Plate 27).

49 (48). H costa usually arched; tail, if present, not spatulate.

*Amblypodia*, Hors. The Oakblues. (Plate 28). (= *Arhopala*, Bdr.: *Acesina*, *Darasana*, *Narathura*, *Nilasera*, *Panchala*, *Satadra* M.: *Flos*, *Iois*, *Doh.*).

50a (45c). F vs 5 and 6 well separated (except some species of No. 60).

50b (56a). H no tail at v1; always lobed and with a tail or tooth almost invariably at v2, sometimes at v3 and even at v4.

50c (53a). H not produced at v2 or tornus; tail comparatively short. F vs 7 and 6 separate, 8 absent and 9 present.

*Surendra* Group. The Acacia Blues.

50d (52). H no tail at v4.

50 (51). H costa convex; tail at v2 comparatively short (may be absent) and at v3, if present, very short.

*Surendra*, M. The Acacia Blue. (Plate 29). (= *Zinaspa*, DeN.).

51 (50). H costa straight, apex pointed. H lobe very large, tail at v2 moderately long and tail at v3 nearly as long.

*Mota*, DeN. The Saffron. (Plate 29).

52 (50d). H slender tails at vs 2, 3 and 4 tail at 2 longest.

*Semanga*, Dist. The Rededge. (Plate 29). (= *Keraunogramma*, Rob.).

53a (50c). H produced at v2 and tail long, no tail at v3. F 7 and 6 close, 8 absent.

*Loxura* Group. The Yamflies.

53b (55). H dorsum excavated before lobe, which is pronounced. Tail very long.

53 (54). F v9 present. No ♂ brand.

*Loxura*, Hors. The Yamfly. (Plate 29).



## H. Lycænidae.—The Blues. Key to Genera—contd.

- 54 (53). F v9 absent. ♂ uph a brand along v1b.  
*Yasoda*, Doh. The branded Yamfly. (Plate 29).
- 55 (53b). H dorsum not excavated and lobe obsolete.  
*Drina*, DeN. The Yams. (Plate 29).
- 56a (50b). H always tailed at v1b as well as at v2 and sometimes at v3 also.
- 56b (59a). F vs 6 and 7 forked or from a point.  
 Spindasis Group. The Silverlines.
- 56c (58). F v8 absent, 9 present.
- 56 (57). H lobe ill developed: tail at v2 half as long as tail at v1b.  
*Apharitis*, Riley. The Silverlines. (= *Cigaritis*, Auct.).
- 57 (56). H lobe prominent: tails at vs 1b and 2 nearly equal.  
*Spindasis*, Wallen. The Silverlines. (Plate 29). (= *Aphnæus*, Auct.).
- 58 (56c). F vs 8 and 9 present in ♂, v8 absent in ♀. H 2 equal tails at vs 1b and 2 in ♂, an additional short tail at v3 in ♀.  
*Zesius*, Hub. The Redspot. (Plate 29).
- 59a (56b). F vs 7 and 6 separate at origins.
- 59b (61a 76a). Tails at ends vs 1b and 2 H approximately equal and no tail at v3. ♀ above more or less blue and no white sub-tornal area H.
- Tajuria Group. The Royals.
- 59 (60). ♂ uph always a brand about or near origin v7.  
*Pratapa*, M. The Tufted Royals. (Plate 29). (*Camena*, Hew.: *Dacalana*, M.: *Arrhenotrix*, Creon, *Maneca*, DeN.).
- 60 (59). ♂ uph no brand. F v8 absent.
- Tajuria, M. The Royals. (Plate 29). (= *Cophanta*, *Remelana*, M.: *Britomartis*, *Bullis*, *Creusa*, *Ops*, DeN.).
- 61a (59b. 76a). Tails at ends vs 1b and 2 unequal. ♀ above never blue and usually with a white sub-tornal area H.
- 61b (68a). Tail at end v1b longer than tail at end v2.  
 Jacoona Group. The Imperials.
- 61c (66a). F v9 long, its origin well before end v10.
- 61 (62a). ♂ no secondary sexual characters. F vs 11 and 12 separate. H v7 from well before 6.
- Charana*, M. The Mandarin Blues. (Plate 29).
- 62a (61). ♂ with secondary sexual characters.
- 62 (63a). F vs 11 and 12 anastomosed in ♂, well separated in ♀. H v7 from just before 6. Tail at v1b 17 mm in ♂, 28 in ♀: at v2 2mm. in ♂, 9 in ♀. ♂ with a black area of modified scales about end cell upf.
- Jacoona*, Dist. The Great Imperial.
- 63a (62). F vs 11 and 12 well separated.
- 63b (65). ♂ ♀ F v8 absent. H vs 3 and 4 from a point; 7 from well before 6.
- 63 (64). ♂ uph large oval black brand about origin v7, covered by a thick tuft of black hairs; unf corresponding nacreous area above mid dorsum, which is bowed. Tail at v1b 10 mm at v2 4 mm.
- Manto*, DeN. The Green Imperial. (= *Pseudomyrina*, Druce.).
- 64 (63). ♂ uph small inconspicuous brand base 6 in the middle of a large nacreous area; unf a tuft of white tipped brown hairs



## H. Lycænidae.—The Blues. Key to Genera—contd.

mid dorsum over a nacreous area; dorsum F bowed. Tail at v1b 8-10 mm, at v2 3-5 mm.

*Mantoides*, Druce. The Brush Imperial.

65 (63b). F v8 present in ♂, absent in ♀. H v3 from just before end cell and 7 from just before 6. ♂ uph prominent circular black brand base 7 in middle of a nacreous area; unf a tuft of white hairs mid dorsum over a nacreous area; dorsum bowed. Tail at v1b 12 mm in ♂, 22mm in ♀; at v2 4-7 mm.

*Neocheritra*, Dist. The Grand Imperials. (Plate 29).

66a (61c). F v9 short, its origin after end v10; 8 absent; 11 and 12 close. No secondary sexual characters. Tail at v2=4 mm.

66 (67). Tail at v1b=8 mm.

*Purlisa*, Dist. The Giant Imperial.

67 (66). Tail at v1b=12mm.

*Suasa*, DeN. The Red Imperial. (Plate 29).

68a (61b). H tail at v2 longer than tail at v1b.

Marmessus Group.

68b (73a). F v9 present.

68c (71a). F v9 comparatively long, origin well before end v10. Tail at v2 very long.

68 (69a). F origin v9 nearer to base v7 than to its apex. F apex truncate and termen angled in middle. Tail at v1b 4mm, at v2 13 mm.

*Cheritrella*, DeN. The Truncate Imperial. (Plate 29).

69a (68). F origin v9 nearer to apex than to base v7.

69 (70). F origin 5 nearer to 6 than to 4. Tail at v1b 6mm, at v2 25mm.

*Neomyrina*, Dist. The White Imperial. (Plate 29).

70 (69). F origin 5 mid 6-4. ♂ uph small pale brand base 7, covered by a thin tuft. Tail at v1b 5mm, at v2 22mm.

*Cheritra*, M. The Common Imperial. (Plate 29).

71a (68c). F v9 short, origin after end v10.

71 (72). F v12 ends before end cell. Tail at v1b 5 mm, v2 18 mm, ♀ v3 1½mm.

*Ticherra*, DeN. The Blue Imperial.

72 (71). F v12 ends after end cell. Tail at v2 under ½ inch. ♂ with brand in one species.

*Biduanda*, Dist. The Posies. (Plate 29).

73a (68b). F v9 absent (rarely present in ♀ of No. 73).

73b (75). H angled and tailed at v3.

73 (74). H not angled at v4. Tail under ½ inch.

*Marmessus*, Hub. The Common Posy. (Plate 29). (= *Drupadia*, M.).

74 (73). H angled at v4, ♂ uph a circular brand bases 2 and 3, which disappears with benzine. Tail over ½ inch.

*Eoxylides*, DeN. The branded Imperial. (= *Marshallia*, Doh.: *Indoxylides*, Druce).

75 (73b). H in ♂ not angled or tailed at v1b and tail at v2 short; in ♀ angled at v1b, but not tailed, tail at v2 long, but under ½ inch.

*Thamala*, M. The Cardinal. (Plate 29).

76a (59b, 61a). H with 3 more or less equal slender tails at vs 1b, 2 and 3. F vs 8 and 9 absent.

H. Lycænidae.—The Blues. Key to Genera—*contd.*

Horaga Group. The Onyxes.

76 (77). H sharply right angled and produced at v4.

*Rathinda*, M. The Monkeypuzzle. (Plate 29).

77 (76). H termen at most faintly angled at v4. ♂ unf a brand in two species.

*Horaga*, M. The Onyxes. (Plate 29).

78a (45b). Eyes hairy.

78 (79a). Palpi hairy. H with 3 slender tails at vs 1b, 2 and 3, that at 2 longest. F vs 8 and 9 absent; 7 and 6 from a point; 11 and 12 separate; 5 and 6 separate.

Catapœcilma Group. *Catapœcilma*, But. The Tinsels. (Plate 29).

79a (78). Palpi smooth.

79b (82a). H with a tail at v1b as well as at v2, that at 1b longest, lobed. F vs 8 and 9 absent, 7 and 6 separate, also 5 and 6.

Hypolycæna Group. The Tits.

79 (80a). Antennæ club flattened and somewhat spatulate. F vs 11 and 12 close.

*Chliaria*, M. The Blue Tits. (Plate 29).

80a (79). Antennæ cylindrical as usual.

80 (81). H apex evenly rounded, end v7 mid 8-6. ♂ one species with a brand on disc upf.

*Hypolycæna*, Fd. The Tits. (Plate 29).

81 (80). H apex sharp, v8 short and end v7 much nearer end v6, termen quite straight from apex to v3. Tails long and fluffy.

*Zeltus*, DeN. The Fluffy Tits. (Plate 29).

82a (79b). H no tail at v1b, though lobe, which is more prominent than in the other groups as a rule, may be pendulous and look like a tail. F v8 absent.

Artipe Group. The Flashes.

82b (89). F v9 present.

82c (86a). F v9 comparatively long, about half as long as v7 and arises well before end v10 from about half way along v7.

82d (84a). No secondary sexual characters.

82 (83). ♂ with slender tail, ♀ with a very long fluffy white tail.

*Artipe*, Bdv. The Green Flash. (Plate 29). (= *Lehera*, DeN.).

83 (82). ♂ ♀ with slender tail at v2.

*Deudorix*, Hew. The Cornelians. (Plate 29).

84a (82d). ♂ uph with a brand about base v7 and usually unf with a tuft mid dorsum.

84 (85). F vs 7 and 6 from a point and lower dcv concave; 11 and 12 parallel, separate. ♂ unf tuft always present.

*Virachola*, M. The Guava Blues. (Plate 29).

85 (84). F vs 6 and 7 separate, lower dcv straight; 11 and 12 close. ♂ tuft missing in two species and individuals of another.

*Rapala*, M. The Flashes. (Plate 29). (= *Baspa*, *Bidaspa*, *Hysudra*, *Nadisepa*, *Vadebra*, M.).

86a (82c). F v9 short, about  $\frac{1}{2}$  length of v7 or less, arising beyond mid 7 and at or after end v10.

86 (87a). H lobe small. F vs 11 and 12 close, ♂ uph prominent brand about base v7 and unf either a tuft or a band.

## H. Lycænidae.—The Blues. Key to Genera—contd.

*Sinthusa*, M. The Sparks. (Plate 29). (= *Pseudochliaria*, Tyl.).

87a (86). H lobe elongate and pendulous.

87 (88). H produced and tail very long, over  $\frac{1}{2}$  inch. ♂ uph brand about base v7 and unf a tuft mid dorsum.

*Bindahara*, M. The Planes. (Plate 29).

88 (87). H tail well under  $\frac{1}{2}$  inch. ♂ no brand.

*Araotes*, Doh. The Witch. (Plate 29).

89 (82b). F v9 absent; 11 and 12 touch. ♂ uph a tuft of black hairs mid cell and an obscure brand about origin v7; unf tuft black hairs mid dorsum over a polished area. H tail under  $\frac{1}{2}$  inch.

*Sithon* Hub. The Plush. (Plate 29).

90 (36b). Highly abnormal and more like a moth. Large, body very stout as wide as cell. F vs 11 and 12 separate; seven ends on termen, 7 and 6 forked, 8 and 9 present; 5 and 6 separate. H lobed, tailless. Eyes smooth. Palpi smooth and unusually small.

**Liphyrinæ.** *Liphyra*, Wd. The Moth Butterfly (Plate 27). (= *Sterosis*, Fd.).

## KEY TO SPECIES

## H1. Cyaniroides.—The Emerald.

Above ♂ shining emerald green, broad dark brown borders; ♀ pale greyish blue with very broad dark brown borders and base H. Below white with numerous fine zigzag lines.

*libna andersoni*, M. (28-32). The Emerald. Kisseraing Is. Mergui (Moore). VR.

## H2. Poritia.—The Gems. (Plate 26).

♂ above brilliant blue or green with a broad black apex and costa F and H the apex F is more or less blue spotted; there may or may not be a more or less well developed black spot in the middle of 1b upf. Below with numerous catenulated bands. ♂♂ are very variable and it is difficult to distinguish between the species.

1a (3a). Below the catenulated bands are evenly distributed; unf across 2 and 3 there are 2 bands internal to the discal band.

1 (2). ♂ upf blue colour confined to 1b and 2, apex and cell unmarked black, uph blue colour up to v5 and mid cell. ♀ extensively violet blue; upf with only a narrow black bar at end cell; more or less prominent submarginal blue spots, between which the veins are obscurely broad reddish. Below grey, bands cinnamon.

*sumatrae*, Fd. (26-38). The Sumatran Gem. Mergui. VR.

2 (1). ♂ upf blue colour to v4; marginal and apical spots large and prominent and with a basal blue streak along upper edge of cell; uph blue colour not above v4 or in cell. Below very dark plumbeous, much darker than any other species of the genus;

H2. Poritia.—The Gems. (Plate 26)—*contd.*

bands close and very dark cinnamon. ♀ brown; upf an obscure orange discal spot; below paler.

*philota*, Hew. (29). The Malay Gem. Mergui. VR.

3a (1a). Below catenulated bands wider apart on disc, especially beyond the cell; upf only one band across 2 and 3 internal to the discal band; ground colour white or grey. ♂ upf blue colour nearly always reaches to v4.

3b (6a). ♀ uph more or less violet blue, no yellow.

3c (5). ♀ upf no yellow whatsoever, broadly violet blue.

3 (4). ♀ uph cell and basal half of 4 black; upf cell black with a blue spot in the middle, 2 apical and 1 or 2 submarginal spots. ♂ upf cell mostly blue, but there is a black streak above the mv nearly to the base; apex and margin usually not spotted, but there may be traces of spots; uph except near margin blue colour does not enter 4, nor into cell except more or less patchily. Below very white, much whiter than any other species except the ♀ of No. 7; catenulated bands pale, with only a faint cinnamon tinge.

*dawna*, Evans. (25-35). The Dawna Gem. Dawnas—S. Burma. R.

4 (3). ♂ ♀ uph cell and to v4 black; upf cell blue. Below grey, bands very prominently cinnamon.

a. ♂ ♀ upf always with apical and 2 or 3 submarginal spots (may be absent in DSF).

\**pleurata geta*, Faw. (30-40). The Green Gem. Manipur—Dawnas. NR.

β. ♂ ♀ apical and submarginal spot absent; ♀ submarginal spots present, but apical may be present or absent.

*pleurata regia*, Evans. (30-38). Tavoy—S. Burma. NR.

5 (3c). ♀ upf always a yellow discal patch in 4; cell black; uph black with a more or less developed violet blue band on disc. ♂ upf cell usually all black, but there may be traces of blue scales at the base and in the middle.

a. ♂ ♀ apical and submarginal spots usually present. ♂ uph cell and all 4 black.

*hewitsoni hewitsoni*, M. (31-38). The Common Gem. Kumaon—Assam. NR. (= *interjecta*, *nigrita*, *palilia*, *principalis*, Fr.).

β. ♂ ♀ upf apical and submarginal spots usually absent. ♂ uph cell and 4 may be blue with a narrow black bar end cell.

*hewitsoni tavoyana*, Doh. (30-36). Burma. NR.

6a (3b). ♀ uph more or less yellow.

6 (7). ♀ above entirely yellow except for a dark brown costa and termen upf and some diffuse marginal spots uph. ♂ upf cell black and the blue colour only just enters 3; submarginal spots obscure, apical absent; uph cell black and space 4 blue except at base. Below white with very prominent ferruginous bands and prominent ferruginous patches at apex F and H, making the underside very distinctive.

*karennia*, Evans. (34-36). The Karen Gem. Karens. Dawnas. R.

7 (6). ♀ above with yellow discal patches only, which are of variable extent, on H consisting of at most a narrow band. ♂

H2. Poritia.—The Gems. (Plate 26)—*contd.*

very variable, but always much bluer than any of the preceding species; upf basal half entirely blue, apical, and submarginal spots usually well developed and the apical may be joined to the blue discal area; uph blue colour never enters cell nor into 4 except sometimes at the margin.

a. ♀ as ♀ of No. 5 but yellow spots uph.

*erycinoides elsiei*, Evans. (26-36). The Blue Gem. Assam—N. Shan States. NR.

β. ♀ above no violet.

\**erycinoides phraatica*, Hew. (26-36). S. Shan States—S. Burma. NR.

## H3. Simiskina.—The Brilliants. (Plate 26).

♂ above black with brilliant blue or green markings; upf a basal streak below the mv, costal spots beyond and a complete curved sub-marginal row, also conjoined spots mid dorsum; uph basal streak below mv, discal and marginal spots. Below no catenulated bands. Termen in ♀ sharply angled and produced at v4. ♂ ♂ very alike above, but ♀ ♀ very distinct.

1a (3a). Unf with a white central band. ♀ above dark brown.

1 (2). Unf the central white band broad and increasing to dorsum markedly, continued on H through end cell. ♀ upf a prominent circular white discal spot. Below dark ferruginous brown.

\**phalena harterti*, Doh. (28-34). The Broad-banded Brilliant. Assam—S. Burma. VR.

2 (1). Unf the central white band narrow, not increasing to dorsum and continued narrowly on H well beyond end cell. Below bright ferruginous, no dark bar end cell unf; a rather obscure whitish sub-marginal band, irregular on H. ♂ above as *phalena*: ♀ plain brown. (Hewitson's type ♀ is tinted dull blue above and on uph has a pale blue line from the dorsum to v4 along the margin; these are inconstant characters in other species.)

*pediada*, Hew. (30). The narrow-banded Brilliant. Mergui. VR.

3a (1a). Below no white band.

3 (4a). Unh ♂ ♀ prominent sharply defined blue line along the termen from tornus to v4. ♀ above plain dark brown with traces uph of a blue marginal line. Below plain, rather pale brown, no ferruginous tinge, pale bordered dark line end cell, similar discal and sub-marginal lines, former being very irregular on H. ♀ only slightly angled at v4.

*pharyge*, Hew. (32-35). The Blueline Brilliant. Mergui. VR.

4a (3). Unh no blue sub-marginal line. Below always with more or less of a ferruginous tinge.

4 (5). ♀ above plain dark brown. ♂ below dark purple brown with a shining gloss, lines as in last; outer half H beyond cell prominently paler; unf sub-marginal line parallel to margin. ♀ below pale brown with a faint purple gloss. ♂ above markings greener than usual.

H3. Simiskina.—The Brilliants. (Plate 26)—*contd.*

\**pasira dohertyi*, Evans. (28-35). The Green Brilliant. Tavoy—S. Burma. R.

5 (4). ♀ above orange yellow; upf apex and termen dark brown, sometimes with dark brown shading of varying width and intensity along dorsum and a thin line end cell; uph all orange yellow, sometimes more or less suffused dark brown scales and with diffuse sub-marginal spots. ♂ above bluer than the last. Below marked as the last; ♂ upf apex and upper part of termen prominently paler and the sub-marginal line curved in at the upper end. ♀ ochreous below with a strong purple wash.

\**phalia*, Hew. 35-40). The Blue Brilliant. Dawnas—S. Burma. R. (= *potina*, Hew.: *fulgens*, Dist.: *binghami*, Fr.).

## H4. Deramas.—The Bluejohn. (Plate 26).

♂ above black, lower part F and H shining blue, divided on F by a black streak in 1b and uph bearing diffused dark sub-marginal spots. ♀ purple instead of blue, more extensive on F and not divided by a black streak. Below purple brown (to ochreous in ♀) with dark discal and sub-marginal line and some dark spots at tornus H. H margin even in ♂; slightly angled at v4 in ♀.

\**livens jasoda*, DeN. (33-36). The Bluejohn. Karens—S. Burma. R. (= *zanella*, DeN.).

## H5. Gerydus.—The Brownies. (Plate 26.)

Above dark brown with a more or less prominent curved white or pale yellow discal band upf from mid costa to tornus, portion in 1b and 2 consisting of more or less detached spots. Below brown with more or less obscure spots on H. Body in ♂ very long, projecting well beyond the wings.

1a (3a). ♂ upf v4 not thickened at base.

1 (2). Unh with a broad central blackish band inside the ordinary discal band, which it completely obscures: also all the ordinary markings on both wings below are obscure.

a. ♂ ♀ upf a very broad curved discal band, consisting of a costal area above end cell, large spot in 4-3 and decreasing spots in 2 and 1b.

\**croton karennia*, nov. (44-46). The Plain Brownie. Karens. R.

β. ♂ upf narrow streak in 4-3 and 2 equal small spots below in 2 and 1b at right angles. ♀ as last but band much narrower.

*croton croton*, Doh. (45-49). Dawnas, Ataran. R.

γ. ♂ upf discal band whiter, nearly as wide as in *karennia*, but quite straight, not curved or angled: spots in 4, 3, 2 equal, spot in 1b very small.

*croton tavoyana*, nov. (44-45). Tavoy. R.

2 (1). Unh. no traces of the black central band. Below normal as in *boisdavali*, with well defined discal band H and spots. ♂ ♀ upf band in ♂ as in typical *croton*, in ♀ as in *karennia*.



**H5. Gerydus.—The Brownies. (Plate 26)—contd.**

*gethusus shania*, nov. (38-40). The Shan Brownie. Bhama—Shan States.—Dawnas. NR.

3a (1a). ♂ upf v4 thickened at base.

3b (6a). Upf pale discal band never quite reaches dorsum and its upper edge is straight or evenly curved.

3c (5). ♂ upf discal band curved and macular: in ♀ it may be coalesced and may even extend to the base, but there is always a central dark streak under the cell, about the origins of vs 2 and 3.

3 (4). Apex upf not conspicuously darker than the rest of the wing; discal band as in last, but in ♂ may be reduced to a small whitish patch base 4.

*\*boisduwali assamensis*, Doh. (32-38). The Common Brownie. Sikkim—Burma. C.

4 (3). Apex F conspicuously darker than the rest of the wing, which is much paler brown; discal band more prominent and in DSF may extend to the base, the whole of the upper side being white except for the apex F, costa H and a discal brown patch F.

*longeana*, DeN. (30-38). Long's Brownie. Manipur—Burma. NR.

5 (3c). Upf discal band broad and white—at least  $\frac{1}{4}$  wing and even edged on both sides, straight and coalesced.

*biggsii*, Dist. (32-38). Bigg's Brownie. Coorg. VR. Burma. R. (= *gopara*, DeN. *atomaria*, Fr.).

6a (3b). Upf discal band broad and upper edge sharply angled in at v3, always extended to dorsum.

6 (7). Upf discal band not divided and often extended to base; ♂ ♀ uph with a pale discal streak.

*symethus diopeithes*, Fruh. (40-50). The Great Brownie Nagas—Burma. VR.

7 (6). Upf discal band completely divided by a broad brown streak from base 2. ♀ upf and all uph except costa very pale brown.

*\*uncon*, Doh. (36-48). The Divided Brownie. Burma. NR.

**H6. Allotinus.—The Darkies. (Plate 26).**

Above dark brown, sometimes with a pale area upf as in last. Below grey striated or spotted on H as in last. Body of ♂ very long, longer than the wings.

1a (3a). Below broad catenulated markings and small dots as in *Gerydus*. Above marked as *Gerydus*.

1 (2). F apex projected as a fine long tooth and termen crenulate. Below brown with an anti-terminal band. ♂ upf yellowish white curved discal fascia in 2-4. ♀ white except for apex, termen and base F and costa H.

*drumila*, M. (48-54). The Crenulate Darkie. Sikkim—Assam. VR. (= *insignis*, Stg.).

2 (1). F apex not projecting, termen straight in ♂ convex in ♀.

a. ♂ ♀ fascia as in ♂ of No. 1, becoming obscure in ♂.

**H6. Allotinus.—The Darkies. (Plate 26).—contd.**

\**multistrigatus multistrigatus*, DeN. (48-54). The Great Darkie. Kumaon—Shan States. R.

β. Below greyish yellow, no ante-terminal band. ♀ band upf obscure.

*multistrigatus aphonius*, Fruh. (48-54). Shan States—Dawnas. R.

3a (1a). Below striated.

3b (8). Upf pale discal marking, if present, never to base and never bluish.

3c (7). Unh dark brown spot mid costa not more prominent than any other spot.

3d (5a). ♂ upf prominent pale streak about basal half v4; ♀ pale discal area. Unf uniform.

3 (4). ♂ upf pale streak broad, reaches v3. Below much striped. Much larger.

\**horsfieldii continentalis*, Fruh. (38-44). The Common Darkie. Assam—Burma. C.

4 (3). ♂ streak short and narrow, not to v3. Below less striped. *posidon atacinus*, Fruh. (34-40). The Lesser Darkie. Burma. R.

5a (3d). ♂ ♀ upf discal streak and pale area obsolete, but may appear in ♂.

5 (6). Unf apex prominently light burnt sienna. ♂ F apex produced, termen straight.

*taras*, Doh. (34-40). The Brown-tipped Darkie. Burma. R.

6 (5). Unf uniform. ♂ apex not produced. ♀ termen H prominently toothed at v4.

*fabijs panormis*, El. (34-40). The Angled Darkie. Nagas—Karens. VR.

7 (3c). Unh prominent dark brown spot mid costa. ♂ ♀ F and H termen crenulated.

*nivalis substrigosa*, M. (20-30). The Small Darkie. Karens—S. Burma. R.

8 (3b). Upf with a blue patch extending to base, narrow in ♂, broad in ♀.

*subviolaceus manychus*, Fruh. (30-38). The Blue Darkie. Manipur—Burma. R.

**H7. Logania.—The Mottles. (Plate 26).**

Above dark brown with a whitish or pale bluish discal area, which may extend to base and all H. Below closely mottled.

1 (2a). Below dark mottled with on H a very prominent broad white streak from base to termen below apex. Above bluish white with a very broad black upf.

*sriwa*, Dist. (28-35). The Striped Mottle. Mergui. VR.

2a (1). Unh uniformly mottled, no white streak. ♂ base v4 swollen.

2 (3a). Unf a very broad white discal area. Upf prominent white discal patch. Margins crenulated.

a. Above no blue colouring.

**H7. Logania.—The Mottles. (Plate 26)—contd.**

*watsoniana subfasciata*, Tyt. (23-30). Watson's Mottle. Manipur. VR.

β. Above basal area F and costa H suffused bluish.

*watsoniana watsoniana*, DeN. (24-32). N. Shan States—Dawnas. R.

3a (2). Unf no white discal area.

3b (5). Upf the pale area always to dorsum: in ♀ entirely white from base to the broad black apex: in the ♂ the base and costa is bluish brown. Uph bluish brown except for costa, but in the ♂ the pale area may be restricted to the middle or absent. Margins crenulate.

3 (4). Unh mottled black and white with brown bands and spots: 2 more or less prominent central white spots, one near end cell, the other mid discs.

\**marmorata*, M. (20-22). The Pale Mottle. Karens—S. Burma. R.

4 (3). Unh mottled ferruginous brown and white: no prominent white spots. Apex unf prominently ferruginous.

*luca*, DeN. (23-30). The Yellow Mottle. N. Shan States.—S. Burma. R.

5 (3b). Upf the pale area confined to a more or less circular patch of variable size. Below mottled ferruginous. Margins entire.

*massalia*, Doh. (20-30). The Dark Mottle. Assam—Burma. R.

**H8. Spalgis.—The Apefly. (Plate 27).**

Above brown with diffused or well defined white patch upf. Below covered with numerous very fine wavy brown lines.

a. Paler. Upf white discal area nearly always present.

\**epius epius*, Wd. (20-30). The Apefly. Ceylon, S. India—Bengal. Kumaon—Burma. Nicobars with *nubilus*. NR.

β. Darker. White area obsolete upf.

*epius nubilus*, M. Andamans, Nicobars.

**H9. Taraka.—The Forest Pierrot (Plate 27).**

Above ♂ dark brown: upf with more or less of a black spotted white discal patch and uph the black spots from below showing through. ♀ white with broad dark costa and termen upf and the dark spots from below showing through faintly. Below white with numerous large black spots, including 4 along the costa F.

\**hamada mendesia*, Fruh. (20-30). The Forest Pierrot. Sikkim—Burma. NR.

H10. *Talicada*.—The Red Pierrot. (Plate 27)—*contd.*

a. Above orange area more extensive, width  $\frac{1}{4}$  inch. Unh markings reduced, most of discal band H absent.

*nyseus nyseus*, Guer. (30-36). The Red Pierrot. Ceylon, S. India. NR. (= *delapolei*, Ril, an ab.).

β. Above orange area restricted, well under  $\frac{1}{4}$  inch. Unh markings large and complete.

\* *nyseus khasiana*, Swin. (30-36). Assam—N. Burma. NR.

γ. Smaller and much darker. Unf outer black border nearly meets discal band; all markings very broad.

*nyseus burmana*, Evans. (28-34). Shan States. R.

H11. *Castalius*.—The Pierrots. (Plate 27).

Mostly white above or with a broad white discal band. Below white with very characteristic markings.

1 (2a). Above white with several black spots on the white areas F and H; bases metallic blue, suffused dark scales in ♀, costa H dark brown. Below with several irregularly arranged black spots. Unf basal markings consist of a long basal streak, spot end cell and a spot in 1b, all well separated.

\* *rosimon rosimon*, F. (24-32). The Common Pierrot. Ceylon. India. Burma. C. (= *approximatus*, But.: *chota*, Swin.).

β. Spots larger.

*rosimon alarbus*, Fr. Andamans. C. South Nicobars. VR.

2a (1). Above a broad white band across both wings, extending to costa on H, except rarely in No. 2, the upper end on F angled outwards; costa F and margins dark brown; white band immaculate except on H in No. 5a.

2b (5). Unf discal band in 3 portions, upper and lower consisting of large spots, central smaller and nearer margin. Unh discal band usually also in 3 parts.

2 (3. 4). Unf basal markings consist of a short basal streak and a well detached broadly angled band from costa to dorsum. Unh at base a narrow elbow band, often macular and reaching costa. ♂ black above.

a. Above white band narrower in all seasonal forms.

*caleta hamatus*, M. (26-32). The Angled Pierrot. Ceylon. NR. (= *interruptus*, DeN.).

β. Above white band wider; markings below smaller and more macular.

\* *caleta decidia*, Hew. S. India. Sikkim—Burma. NR.

3 (2. 4). Unf basal markings consist of 2 parallel and nearly equal inclined streaks. Unh 2 parallel basal streaks, not reaching costa, often coalesced. ♂ cobalt blue above; ♀ dark brown.

a. Above discal band broad. Below markings smaller and well separated.

*ethion ethion*, Db. and Hew. (26-30). The Banded Blue Pierrot. Ceylon, S. India. Assam—Burma. Andamans. NR. (= *colmus*, *vavasana*, Fr.).

β. Above discal band narrower. Below markings large, discal spots on H coalesced.

H11. *Castalius*.—The Pierrots. (Plate 27)—*contd.*

*ethion airavati*, Doh. Nicobars. NR.

4 (2. 3). Unf basal markings consist of a single broad, sharply angled band meeting a black area at base H. ♂ black above.

*elna noliteia*, Fruh. (30-34). The Elbowed Pierrot. Orissa. Sikkim—Burma. Andamans. NR. (= *elina*, Fr.).

5 (2b). Unf discal band either continuous or lower part only separate; basal markings consist of a single broad inclined straight streak from mid costa to dorsum near base, joining a black area at base H. ♂ above black. Unh the 3 parts of the discal band may be conjoined.

a. Above white areas more extensive; in DSF uph black discal spots show up as below owing to the black margin being narrower.

*roxus roxana*, DeN. (26-30). The Straight Pierrot. Assam—N. Burma. NR.

β. Above white areas narrower. Uph never with detached discal spots.

\* *roxus*, *roxus*, God. S. Burma. Andamans. NR.

γ. Above white areas restricted. Below markings very broad, discal bands continuous. Both sides with white marginal spots.

*roxus manluena*, Fd. Nicobars. R.

H12. *Tarucus*.—The Blue Pierrots. (Plate 27).

Small; blue above. Below white with a prominent dark streak from the base in each wing. Close to *Castalius*, but without the large white areas above.

1a (3a). Unf and unh spot mid cell very much nearer to the spot end cell than to the basal streak: discal and basal markings large: unh at most only the two tornal spots with metallic scales. ♂ above very dark purple blue, border 1 mm. Androconia 16 ribbed.

1 (2). Unf and unh discal spot in 5 coalesced with the postdiscal band. ♀ uniform dark brown above.

\* *ananda*, DeN. (22-28). The Dark Pierrot. S. India. Sikkim—Dawnas. NR.

2 (1). Unf and unh discal spot in 5 separate. ♂ paler. ♀ bases broadly bluish, disc F whitish and spots from below show.

*dharta*, BB. (22-28). The Assam Pierrot. Sikkim—Assam. NR.

3a (1a). Unf and unh spot mid cell equidistant between spot end cell and basal streak: all markings small: unh all except the apical sub-marginal spots with metallic scales.

3 (4a). ♂ upf with very broad dusky border, 2-3 mm on F. Upf a prominent spot end cell and often with discal spots: uph spot end cell. ♀ normally dark brown, but there may be some basal blue scaling and the disc may be spotted on a whitish ground. Below spotted as in *callinara*, not with streaks. Androconia 16 ribbed.

a. Small. ♂ dusky dark violet blue. 2nd generation darker.

*venosus hazara*, nov. (24-26). The Himalayan Pierrot. Abbotabad (Mile 6 Thundiani Road). NR.

H12. *Tarucus*.—The Blue Pierrots. (Plate 27)—*contd.*

β. Large. ♂ very much paler violet blue.

*venosus venosus*, M. (27-31). Kangra. Kulu. NR.

4a (3). ♂ above border never over 1 mm. ♀ always with the base blue scaled and a spotted white disc F. The species are all very variable, seasonally, geographically and individually. Identification can only be ensured by an examination of the ♂ genitalia (see Bethune Baker's paper on the genus in TES 1917).

4 (5a). Below the postdiscal band broken into spots and the markings generally formed of spots and not streaks: unh the discal spots in 5, 6, 7 equidistant and in line. ♂ above violet blue to clear dark blue: upf spot end cell prominent, otherwise unmarked. Androconia elongate, sometimes very markedly so, 12-14 ribbed.

*\*callinara*, But. (24-26). The Spotted Pierrot. Peshawar—Bengal. N. Burma. R.

5a (4). Below the postdiscal band linear, continuous and the markings more or less in streaks: unh discal spot in 6 nearer spot in 7, shifted in and often conjoined.

5b (7a). Androconia with few, about 12 ribs. ♂ upf no discal spots.

5 (6). ♂ upf border comparatively broad, 1 mm. F more produced and termen straighter towards tornus. ♂ above violet blue rather transparent, spot end cell upf dusky: in the DSF there is often a whitish discal area.

*theophrastus indica*, nov. (24-30). The Pointed Pierrot. Baluchistan. Punjab. Kathiawar. Rajputana. C.

6 (5). ♂ upf border narrow. F not produced and termen evenly convex. ♂ upf violet blue, spot end cell upf prominent.

*extricatus*, But. (23-24). The Rounded Pierrot. Sind, Punjab. N.W.F. Province. Kathiawar. Rajputana. Bombay. NR.

7a (5b). Androconia with many, about 16, ribs.

7 (8a). Below with rusty reddish markings on a cream ground. In the DSF the ground is darker, brownish and the markings tend to disappear. ♂ above bright deep blue, non-transparent, differing markedly from other species. Upf spot end cell prominent: in the DSF discal spots upf may appear, as well as marginal spots F and H.

*alteratus*, M. (20-23). The Rusty Pierrot. Peshawar. Campbellpore. Kangra. Kulu. Central India. NR.

8a (7). Below markings normally black.

8 (9a). ♂ upf always with discal spots: rather dark blue with a narrow border. Small.

*nigra*, BB. (21-24). The Spotted Pierrot. Bolan, Baluchistan. Kathiawar. Peshawar. Central India. NR.

9a (8). ♂ upf normally without discal spots.

9 (10). ♂ above border comparatively broad and apt to be diffused. A very variable and confusing species, especially the WSF, which may be spotted upf as in *kala* or may be spotted below as in *callinara*. Normally comparatively large.

*nara*, Koll. (24-28). The Striped Pierrot. Ceylon. S. India—Sind, Mussoorie and Bengal. NR. (=probably *bengalensis*, BB, founded on a single ♂ with perhaps aberrant genitalia).



**H12. Tarucus.—The Blue Pierrots. (Plate 27)—contd.**

10 (9). ♂ above border clearly defined and very narrow: marking from below show through by transparency more clearly than usual.

*mediterraneæ*, BB. (23-26). The Mediterranean Pierrot. Baluchistan (Dalbandin). NR.

**H13. Syntarucus.—The Zebra Blue. (Plate 27).**

Above ♂ violet blue; ♀ base blue with a white discal area F bearing black spots. Below with alternate broad and narrow bands at right angles to the costa, broken into spots on H. Markings variable and irregular, but quite different to any other species. Unh metallic spots at tornus. Androconia mushroom shaped, 10 ribbed.

\**plinius*, F. (22-30). The Zebra Blue. Ceylon, India, Burma. C.

**H14. Azanus.—The Babul Blues. (Plate 27).**

Small blues with catenulated spots below. Unh prominent black tornal spots in 1a and 2; basal and costal spots also black.

1a (4). Unf no spot in cell. Androconia very long and narrow, 4-ribbed.

1 (2-3). ♂ above bright lilac blue, the scales modified in the centre of the disc F, where the blue colour appears darker, borders broad increasing at apex F and H. Below markings well developed. ♀ brown, no blue at base. Unh a basal costal brown streak.

\**ubaldus*, Cr. (20-25). The Bright Babul Blue. Ceylon, India, N. Burma. C. (= *zena*, M.).

2 (1-3). ♂ duller violet blue, more uniform, area with modified scales present, but inconspicuous. ♀ blue at bases. Below usually markings faint.

*uranus* But. (20-25). The Dull Babul Blue. India. C.

3 (1-2). As No. 2, but with broad dusky borders and darker below. Unh no basal costal streak.

*urios*, Ril. (28). The Siam Babul Blue. Burma. R.

4 (1a). Unf a spot in cell; unh prominent upper basal streak. ♂ as last above, but no modified scales. ♀ blue at bases, prominent spot end cell and whitish beyond it. Androconia rectangular, basally concave, 12-ribbed.

*jesous gamra*, Led. (21-26). The African Babul Blue. Ceylon, India, Burma. NR. (= *crameri*, M.).

**H15. Niphanda.—The Pointed Pierrot. (Plate 27).**

Above ♂ dark purple blue, markings from below show through faintly on F. ♀ disc whitish, prominent discal markings. Unf prominent dark streak from base along upper edge cell; spot mid cell continued to dorsum; lower part of discal band in 1b and 2 much

**H15. Niphanda.—The Pointed Pierrot. (Plate 27)—contd.**

shifted in. Unh spot base 7 and discal spots in 6 and 7 very prominently black, contrasting with rest.

1a (3). Unh dark bar end cell broad and pale centred. Unf double marginal spot in 1b. ♂ with peculiar hieroglyphically marked androconial scales.

1 (2). ♂ above shining dark blue, border a thread. ♀ bases broadly pale blue. Unh single large subternal spot.

*tessellata*, M. (30-38). The Tessellate Pierrot. N. Shan States—S. Burma. R.

2 (1). ♂ above dull purple, border broader. ♀ bases brown. Unh two prominent subternal spots.

*\*cymbia*, DeN. (26-30). The Pointed Pierrot. Sikkim—Dawnas. R. (= *plinioides*, M.).

3 (1a). Unh dark bar end cell narrow, not pale centred: unf single marginal spot in 1b. ♀ as *cymbia*, but unh marginal spots equal throughout. ♂ without androconia: above shining purple, border broad: unf whitish pre-apical area and similar central area.

*marcia*, Fawcett. (26-30). Fawcett's Pierrot. S. Shan States—S. Burma. Malaya. R.

**H16. Pithecopus.—The Forest Quaker. (Plate 27).**

Brown or blue above. Below white, with a large prominent black costal spot unh and no basal markings.

1 (2). Above dark shining blue with broad brown border in ♂; ♀ brown. Unh no postdiscal band.

*fulgens*, Doh. (22-28). The Blue Quaker. Assam. R.

2 (1). Above ♂ ♀ brown, paler on disc F. Unh usually with narrow postdiscal band. Unf 2 small prominent costal spots.

*\*hylax*, F. (21-26). The Forest Quaker. Sikkim—Burma. NR.

**H17. Neopithecopus.—The Quakers. (Plate 27).**

Above brown with more or less of a white discal patch F and H ranging from almost entirely brown in WSF to almost entirely white in DSF. Below very like *P. hylax*; unh black costal spot is smaller and with a small spot on dorsum, also there may be 3 basal spots and a postdiscal band. Unf no prominent spots on the costa except as part of the postdiscal band.

*\*salmora*, But. (20-30). The Quaker. Ceylon, S. India—Bengal. Kumaon—Burma. Andamans. C. (= *dharma*, *gaura*, *to-dara*, M.).

**H18. Everes.—The Tailed Cupids. (Plate 27).**

Small usually blue in the ♂. Below grey to white, spots as usual and with more or less prominent orange tornal spots unh.

1a (6a). ♂ above blue. Unh no spot near base 1c: discal spots normal.

H18. Everes.—The Tailed Cupids. (Plate 27)—*contd.*

1 (2a). Tailless. ♂ above dull blue, shading to a broad fuscous border. ♀ plain brown. Below grey, spots minute and marginal spots obsolete: unh discal spot in 6 between the spots in 5 and 7, spots 2-5 on an arc, somewhat obscure black tornal spots crowned with orange and metallic scales. Androconia circular, 20 ribbed.

*shandura*, Evans. (21-25). The Shandur Cupid. Chitral, Shandur Pass. R.

2a (1). Tailed. Androconia 12-16 ribbed.

2b (5). Below spots all black, of equal intensity. Unh discal spot in 6 shifted in. Androconia not elongate.

2c (4). ♂ termen F more or less straight in the middle.

2 (3). Genitalia differ, otherwise difficult to distinguish. ♀ above brown, usually with tornal orange spots H.

a. Below ground colour pale brown, not grey as is usual. Unf discal spots decrease towards apex and the spot in 6 is minute or absent. Unh the orange sub-marginal band more extensive than usual, from v1b-6 and the marginal spots in 2, 3, 4 equally prominent. WSF larger than DSF.

*argiades indica*, nov. (20-25). The Tailed Cupid. Chitral—Kumaon. NR.

β. Considerably larger. Below greyish white: unf discal spots equally prominent, including spot in 6. Unh sub-marginal orange band more restricted, marginal spots in 2, 3 more prominent than others.

\**argiades hellotia*, Men. (24-30). Sikkim interior. Bhutan. Mishmi Hills. NR.

3 (2). Below as *hellotia*, much smaller. ♂ upf border more sharply defined. ♀ no orange at tornus uph, but there may be whitish lunules: there may be some obscure blue scaling or the wings may be dull bluish with a broad border. Sometimes tailless.

*diporides*, Chap. (23-26). Chapman's Cupid. Himalayas—N. Burma. R.

4 (2c). ♂ termen F strongly and evenly convex: upf darker blue, border broad and clearly defined, spot end cell usually very prominent. ♀ as *diporides*, but uph often some orange at the tornus.

*dipora*, M. (22-25). The Dusky Blue Cupid. Himalayas—Karens. NR.

5 (2b). Unh spot mid cell, the 2 costal spots in 7 and the spot in 1a on dorsum black, forming a contrast with the remaining spots, which are grey and hardly darker than the ground. Unf discal spots in line. Unh discal spot in 6 in line with the spots in 5 and 7 or very nearly so. Androconia elongate.

a. ♂ above border about 2 mm. ♀ with discal areas pale dull blue.

*parrhasius parrhasius*, F. (22-28). The Indian Cupid. Ceylon, S. India. NR.

β. ♂ above variable, usually much darker, with prominent black veins and broader border. ♀ usually uniform black, but Burmese specimens often have the disc blue.

*parrhasius assamica*, Tyt. Assam—Burma. NR. (= *rileyi*, Godfrey).

**H18. Everes.—The Tailed Cupids. (Plate 27)—contd.**

γ. Above as α. ♀ with discal areas above paler, often nearly white. Below discal markings obsolete or nearly so, never so prominent as the marginal markings.

*parrhasius pila*, Evans. (22-26). All Nicobars. NR.

6a (1a). ♂ above dark brown, no androconia.

6 (7a). Unh no spot near base 1c adjoining spot mid cell. Below discal bands much broken, broad and very black; unf a continuous upper band in 3-6 and a similar quite separate lower band in 1-2; unh discal band in 3 parts. Above ♂ ♀ uniform dark brown. Tailed.

\* *potanini*, Alph. (22-25). The Banded Cupid. N. Burma—Dawnas. R. (= *umbriel*, Doh.).

7a (6). Unh with a spot in 1c adjoining the spot mid cell. Above ♂ ♀ dark brown. Below markings more or less normal.

7 (8). Tailed. Unh with prominent orange markings at tornus. Below leaden grey, markings small, prominent, and of uniform size.

\* *kala*, DeN. (22-25). The Black Cupid. Nagas—S. Shan States. R.

8 (7). Tailless. Unh no orange markings at tornus. Below nearly white, markings H irregular and of unequal size.

\* *moorei*, Leech. (20-23). Moore's Cupid. Assam. VR.

**H19. Bothrinia.—The Hedge Cupid. (Plate 27).**

Resembles *Lycænopsis* very closely. ♂ above dull blue with a black bar end cell F, ♀ border rather narrow, dilated at apex F. Below grey; unf discal spots 1b-5 in line, spot in 6 only slightly shifted in; unh spots small and regular, discal spot in 1c almost in line with spots in 1b and 2. No androconia.

\* *chennelli*, DeN. (22-25). The Hedge Cupid. Assam—Karens. R.

**H20. Megisba.—The Malayan. (Plate 27).**

Above dark brown with a well defined whitish discal patch nearly always present upf. Below white with spots as usual, that is with a discal series and on H basal spots; in addition in strongly marked specimens there are 4 small spots on the costa upf as well as a spot in the cell.

α. Tailless.

\* *malaya thwaitesi*, M. (20-30). The Malayan. Ceylon, S. India—Bengal. NR. (= *hampsoni*, M.).

β. Tailed.

*malaya sikkima*, M. Kumaon—Burma. Andamans. NR. (= *albidisca*, M.: *ganga*, Swin.).

γ. Above white area absent. Below basal markings reduced; discal markings very fine on the forewing and faint on the hindwing.

*malaya presbyter*, Fruh. Central and South Nicobars. R.

H21. *Lycænopsis*.—The Hedge Blues. (Plate 27).

♂ blue above, sometimes with white discal areas and a dark border of varying width. Below grey to white; spots as usual, but never any metallic or orange spots and no spot in cell F. Unf spot in 6 shifted in normally out of line with the rest of the discal spots and unh discal spot in 6 is shifted in out of line with the spots in 5 and 7.

1a (13a). F vs 11 and 12 bent towards each other and may even touch: v 12 ends over end cell. Androconia only present in last 4 species.

*Haraldus* Group.

1 (2a). Below white, no basal or cell spots, submarginal spots large and immediately preceded by the discal line. ♂ dark blue, border  $\frac{1}{2}$  mm widening at apex. ♀ dark brown with a well defined white band above.

*haraldus ananga*, Fd. (40-42). Felder's Hedge Blue. Victoria Point. VR.

2a (1). Below with basal markings H and spot end cell F and H.

2b (5a). Unh with a spot at extreme base of 7.

2c (4). Unh no spot near base 1b or if present also a spot at base cell. Unf discal spot in 2 oblique, directed to spot end cell, spot in 4 similar, spot in 3 vertical directed to centre of spot in 4. Below markings coarse in DSF, narrow in WSF: unh discal spot in 4 oblique and elongate, often a spot base 2: sometimes unf an extra costal spot over spot in 6 and unh spot extreme base 7.

2 (3). Unf inner edges discal spots 2-5 very irregular. ♂ above shining blue.

a. ♂ above as  $\beta$ , darker and more uniform lavender blue: upf borders narrower.

*puspa felderi Toxopeus*. (28-35). The Common Hedge Blue. Ceylon. C.

$\beta$ . ♂ above with prominent white patches in DSF; border F  $1\frac{1}{2}$  mm, dilated at apex.

\* *puspa gisca*, Fruh. (28-35) India, N. Burma. C. (= *artena*, Fruh., DSF).

$\gamma$ . Below markings less coarse.

*puspa imperatrix*, But. Karens—S. Burma. C.

$\delta$ . Above as *gisca*; unh with a spot near base 1b and spot base cell.

*puspa telis*, Fr. Andamans.

$\eta$ . ♂ paler blue and no white patches. ♀ white areas very restricted and dusky.

*puspa cyanescens*, DeN. (27-32). Car and Central Nicobars. R.

$\xi$ . ♀ upf blue area more extensive: uph marginal spots more prominent. Below markings larger and more prominent.

*puspa prominens*, DeN. South Nicobars. VR.

3 (2). Unf inner edges of spots 2-5 on an even arc. ♂ shining blue, border  $1-1\frac{1}{2}$  mm, dilated at apex, no white patches.

*lilacea*, Hamp. (29-32). Hampson's Hedge Blue. Ceylon. S. India. R. (= *crissa*, DeN.: *moorei*, *Toxopeus*).

4 (2c). Unh with a spot at base 1b: spot in 4 oblique, elongate. ♂ above costa and termen broad dark brown, disc white, base dull

H21. *Lycænopsis*.—The Hedge Blues. (Plate 27)—*contd.*

blue: H dark brown with a narrow white discal patch and base dull leaden blue.

*quadriplaga dohertyi*, Tyt. (32). The Naga Hedge Blue. Nagas. VR.

5a (2b). Unh no spot extreme base 7.

5b (12). Unh no spot near base in 1b.

5c (10a). Unf discal spot in 3 oblique as usual. Unh discal spot in 7 large.

5 (6a). Unh discal spots in 4 and 5 much nearer margin. Below chalky white, markings prominent. ♂ above metallic blue, border 4mm at apex F, 1 mm elsewhere: upper discal white patch H. ♀ above large white discal areas.

*coxae distanti*, Fruh. (28). The Chalky Hedge Blue, Mergui. VR.

6a (5). Unh discal spots in 4, 5 normal, mid end cell and margin. Below white to pale grey. ♂ above shining rather dark metallic lavender blue.

6 (7a). ♂ apex F produced and pointed and termen quite straight, differing from rest of genus. Upf the black apex much broader than usual, the inner edge straight: border F and H  $1\frac{1}{2}$  mm. ♀ dark brown with a narrow shining greenish blue metallic discal area in 1-3 upf. Below markings fine, upf lower two discal spots shifted in: ground colour white, in ♀ shaded brown at apex F.

*chelaka lenya*, nov. (28-30). The Pointed Hedge Blue. S. Mergui and Malaya. VR.

7a (6). ♂ apex F normal, rounded, and termen convex.

7b (9). ♂ uph blue colour extends to well beyond end cell.

7 (8). Comparatively large. Upf border broadens at tornus. ♀ with blue irrorated white patches above.

a. Darker and dark border broader.

*melaena parrishii*, Rhé Phil. (28-30). The Metallic Hedge Blue. Assam, Manipur. R. (= *melaenoides*, Tyt.).

β. Border narrower  $1\frac{1}{2}$  mm. Above variable from a dark form with a convex termen to a form with narrow whitish discal patches, a straighter termen and larger.

*melaena melaena*, Doh. (26-30). Ataran—Tavoy. R.

8 (7). Much smaller, with a narrow border, 1 mm, which does not widen at tornus F: may have diffused whitish discal patches. ♀ brown with a white discal area in 1-3 upf, irrorated pale blue.

*minima*, nov. (20-22). The Tiny Hedge Blue. Manipur. Dawnas. R.

9 (7b). ♂ uph extreme base only blue. Upf blue area as *melaena*, but colour much more purple. Below markings greyer and more regular, showing an approach to the *Argiolus* group. Androconia with 14 ribs.

*cyma*, *Toxopeus*. (30). The Dark Hedge Blue. Mergui—Malaya. VR.

10a (5c). Unf upper edge vertical spot in 3 joins or is directed to outer edge of the oblique or horizontal spot in 4. Androconia have only 8 ribs.



H21. *Lycænopsis*.—The Hedge Blues. (Plate 27)—*contd.*

10 (11). Unh spot in 7 linear. Below pale grey, sub-marginal marking faint. ♂ above rather dark shining blue, border 1 mm: upf with 2 conjoined, sharply defined, white patches at bases 2 and 3 and a similar patch in 6 H.

*albidisca*, M. (32-38). The Whitedisc Hedge Blue. S. India. NR.

11 (10). Unh discal spot in 7 round. Below grey, markings large and coarse in DSF, narrow in WSF. ♂ above dark shining blue border 2 mm and a large white discal patch F and H.

*marginata*, DeN. (30-36). The Margined Hedge Blue. Kumaon—Karens. NR.

12 (5b). Unh always spot near base in 1b. Androconia with 14 ribs. Unh discal spot in 7 round and very large: markings prominent. ♂ above bright shining blue, border 2mm, in DSF a white patch on disc F: ♀ with a broad, well defined, straight-edged white band on F and most of H is white in the DSF.

*\*transpecta*, M. (28-36). The white-banded Hedge Blue. Sikkim—Burma. NR. (= *latimargo*, M.).

13a (1a). F vs 11 and 12 more or less straight and separate, v12 ends before end cell. Androconia always present.

13b (21a). Unf discal band extends into 1b except in *akasa* and individuals of *lavendularis* and *dilecta*.

13c (17a). Below no submarginal lunules.

Akasa Group.

13 (14a). Below white, marginal markings absent; spots on H very minute: discal spots on F very large, spots in 2 and 3 shifted out near the margin, no spot in 6. Above ♂ dusky blue, border 4 mm; ♀ disc F white, H all dusky blue. Androconia 12-ribbed.

*\*vardhana*, M. (38-44). The Dusky Hedge Blue. Kashmir—Kumaon. NR.

14a (13). Below marginal markings present; unf discal spots in 2 and 3 not shifted out and markings on F and H of equal size.

14 (15a). Unf never a discal spot in 1b. Below white, markings very small. Above white with broad dark costa and termen F; base and costa leaden blue in ♂ dark brown in ♀.

*\*akasa marisa*, Fruh. (26-30). The White Hedge Blue. Ceylon, S. India. NR.

15a (14). Unf with a discal spot in 1b.

15 (16). Unh discal spot in 4 oblique and elongated. Below white, usually a spot in 1b unf. ♂ above pale blue with a large white discal patch F and H; F apex broadly dark brown, reducing to a thread at tornus. ♀ dark brown with narrow white discal patch F and H. Androconia few 14-ribbed.

*\*albocærulea*, M. (26-34). The Albocerulean. Simla—Karens. R.

16 (15). Unh discal spot in 4 normal: unf discal spots in 2-4 in line. Unf always discal spot in 1b, which is shifted in. Below pale grey. Above dark blue, border a thread; ♀ violet blue with broad borders. Androconia spatulate, 9 ribs.

*lanka*, M. (27-32). The Ceylon Hedge Blue. Ceylon. R.

17a (13c). Below with submarginal lunules and marginal spots. Singalensis Group.

H21. *Lycænopsis*.—The Hedge Blues. (Plate 27)—*contd.*

17b (19a). Unh with a spot near base 1b.

17 (18). Unh discal spot in 6 much nearer bar end cell. Below white, all markings dark brown: unh discal spot in 4 slightly oblique and not longer than the spot in 2. ♂ above rather pale violet blue, border a thread. Androconia 14 ribbed.

*singalensis*, Fd. (34-39). The Singhalese Hedge Blue. Ceylon. R.

18 (17). Unh discal spot in 6 mid spot in 5 and bar end cell. Below pale grey and markings grey except for black basal and costal spots H. ♂ above blue, border 1 mm. Androconia peculiar, triangular 13 ribbed.

*musina musinoides*, Swin. (26-30). Swinhoe's Hedge Blue. Assam—S. Shan States. NR.

19a (17b). Unh no spot near base 1b.

19 (20). Below pale grey. ♂ above blue with a narrow border: cilia unchequered. Androconia 13 ribbed.

a. Below spots irregular: unf spot in 1b very oblique. ♂ upf border very narrow and not dilated at apex. ♀ border narrow and no white patches.

*lavendularis lavendularis*, M. (28-32). The Plain Hedge Blue. Ceylon. NR. (= *amitra*, Fruh.).

β. Below spots more regular. ♂ above as last. ♀ borders broader.

*lavendularis limbata*, M. S. India—Bengal. NR.

γ. Below markings broader, variable. ♂ upf border broader and always dilated at apex.

*lavendularis placida*, DeN. (28-34). Sikkim—Burma. NR.

20 (19). Below white, markings small. Unh spot in 4 usually oblique and elongate and spot in 3 minute or absent. ♂ above rather pale blue, border a thread, white discal patches present or absent. Androconia 12 ribbed.

\* *cardia dilecta*, M. (28-32). The Pale Hedge Blue. Simla—Karens. NR.

21a (13b). Unf discal band never enters 1b.

Argiolus Group.

21 (22a). Below discal spot in 7 and basal spots H much blacker than the rest. ♂ above rather pale lavender blue with a broad even dark border. Androconia circular, 14 ribbed.

*binghami*, Chap. (30). Chapman's Hedge Blue. Assam—N. Burma. VR.

22a (21). Below spots of equal intensity. Androconia quadrate, 12-16 ribbed.

22 (23a). Unh with prominent green suffusion at the base. ♂ above border very narrow and regular, not dilated at apex F.

a. Paler. Below markings smaller.

*huegellii huegellii*, M. (34-40). The Large Hedge Blue. Kashmir—Kumaon. C.

β. Much darker blue. Below markings larger and clearer, but becoming obsolete in the DSF.

*huegellii oreana*, Swin. (32-40). Sikkim interior. Bhutan—Assam. NR. (= *oreoides*, Evans, DSF).

H21. *Lycænopsis*.—The Hedge Blues. (Plate 27)—*contd.*

23a (22). Unh no greenish blue suffusion at the base, but there may be a sheen in *kollari*. ♂ above narrow dark border dilated at apex F.

23 (24a). Large. Pale purplish blue with prominent silvery veins and costa F. ♀ veins uph not black outlined as in *huegelii*.

*ladonides gigas*, Hemming. (40). The Silvery Hedge Blue. Murree—Kumaon. NR.

24a (23). Small.

24 (25). F termen more convex. Androconia 12 ribbed.

a. ♂ never with white patches above, border F 1mm. Below white with black markings.

*argiolus kollari*, Wd. (25-32). The Hill Hedge Blue. Chitral—Kumaon. C. (= *cælestina*, Koll. : *kashmira*, M. : *trita*, Swin.).

β. ♂ above with prominent white discal patches in the DSF : border very variable, but usually much wider, and in the WSF continued full width to the tornus upf. Below white to grey and the markings may be black or grey, becoming obscure in the DSF and the marginal spots uph may be absent.

\* *argiolus sikkima*, M. (25-34). Sikkim—Karens. C. (= *albobaculeoides*, *bothrioides*, Chap.).

25 (24). F termen straight. Androconia 15 ribbed. WSF border upf tapers to tornus. DSF markings below clear and uph marginal spots present. Very like *sikkima*.

*jynteana*, DeN. (25-34). The Jyntea Hedge Blue. Sikkim—Dawnas. NR. (= *puspargiolus*, Chap. : *victoria*, Swin.).

H22. *Polyommatus*.—The Meadow Blues. (Plate 27).

Blue or dark brown above. Females brown, often with orange marginal spots. Below of various patterns, the spots following the same pattern.

1a (22a). Eyes smooth.

1 (2a). Unh with a spot base 8. Below white with numerous very large black spots, showing through above. Above white with broad dark brown border; white area suffused blue in ♂, only at base in ♀. Androconia 12 ribbed.

*Atroguttata* Group.

\* *atroguttata*, Ob. (44-48). The Great Spotted Blue. Naga—Chin Hills. R. (= *albida*, Leech).

2a (1). Unh no spot base 8 and never white above.

2b (14a). Unh with dark spot end cell, dark discal and basal spots and sub-marginal markings. (Some races of *christophi*, *eumedon* and *semiargus* are aberrant).

2 (3a). Unf with spot in cell and cilia chequered. Unh marginal spots orange crowned. Above ♂ pale to rather dusky blue with a more or less broad border : prominent bars end cells. ♀ brown. Androconia 16 ribbed.

Baton Group.

a. Above pale, outwardly whitish blue, narrow, well defined border. Below markings small.

H22. *Polyommatus*.—The Meadow Blues. (Plate 27)—contd.

*vicrama clara*, Stg. (24). The Chequered Blue. Baluchistan. R. (= *hylas* and *baton*, Auct. in error).

β. Above dusky blue with broad, ill-defined border. Below markings large and coarse.

\**vicrama cashmirensis*, M. (26). Chitral—Kashmir. Ladak. NR.

γ. Smaller. Above dull blue. Below darker and with small spots,

*vicrama vicrama*, M. (20). Kunawur. Shipki. Bashahr. R.

3a (2). Unf no spot in cell and cilia plain.

3b (8a). Unh discal spot in 7 midway between the basal spot in 7 and discal spot in 6. Androconia 10-12 ribbed, except *sieversi* with 16.

Argus Group.

3c (6a). Upf no spot end cell.

3 (4a). Below complete row red marginal spots, at most faint traces of metallic scales in 2 H: discal spots regular, nearer margin than usual: unh spot in 1c not shifted out of line as usual. Above ♂ violet blue, border linear, with somewhat obscure red spots at tornus H: ♀ brown with red tornal spots F and H.

\**pylaon indica*, Evans. (29-31). The Baluchi Jewel Blue. Baluchistan. N. Waziristan. NR.

4a (3). Below without prominent red marginal spots and always with prominent metallic scales about tornus H.

4 (5). Unh small metallic spots along entire margin and marginal spots F and H faintly orange crowned. ♂ above rather dull violet blue, border narrow: ♀ brown, bases suffused blue.

a. Below discal spots all small and well defined.

*christophi bracteata*, But. (28). The Small Jewel Blue. Baluchistan. NR.

β. Unh discal spots small: unf much enlarged, especially spot in 2.

\**christophi lesliei*, Tyt. (30-35). Chitral. NR.

γ. Unh discal spots minute and often absent: unf small and well defined.

*christophi samudra*, M. (28-34). Gilgit. Baltistan. Kashmir and Ladak. NR.

5 (4). Below only orange at tornus H, crowning prominent metallic scales in 1c and 2: all spots large and prominent: unf discal spot in 2 elongate and shifted under spot end cell: sub-marginal lunules coalesced to a broad dusky band. ♂ above bright blue with a conspicuous border. ♀ brown with prominent orange tornal spots H and often with postdiscal white spots F and H: very variable.

a. Upf dark border in ♂ comparatively narrow and preceded by dark veins. Below pale: unf spot in 1b detached.

*loewii chamanica*, M. (34-38). The Large Jewel Blue. Baluchistan. C.

β. Upf dark border broad and diffused, veins dark. Unf spot in 1b conjoined to the sub-marginal band.

\**loewii sanoga*, Evans. Chitral. NR. (= *baroghila*, Tyt, an ab.).

H22. *Polyommatus*.—The Meadow Blues. (Plate 27)—*contd.*

γ. Upf dark border narrow, veins not darkened. Below as *chamanica*, ground colour darker. Smaller.

*loewii laura*, nov. (32-34). Ladak. NR.

6a (3c). Upf prominent spot end cell.

6 (7). Unh no orange spots, single tornal black spot in 2 with metallic scales. ♂ above pale lavender blue, border a thread, small black tornal spot in 2 H. ♀ dark brown with dark blue bases: uph prominent blue circled marginal spot in 2 with obscure black spots on either side. Below pale leaden grey, spots as in *loewii*, but smaller and sub-marginal markings faint. Differs from *sieversi* in the ♂ being much paler and with a narrower border.

*sieversi felicia*, nov. (32). The Pale Jewel Blue. Baluchistan. VR.

7 (6). Unh complete dull orange marginal band with metallic scales on the 3 or 4 subtornal spots. ♂ above dark brown more or less overlaid dark blue scales, leaving a broad border F and marginal spots H. ♀ similar but the blue scaling confined to the bases, the sub-marginal spots H obscurely orange crowned. Below leaden grey: unf discal spots large, touching and in an unbroken sinuous line, sub-marginal markings narrow and clearly defined. Differs from *hyrcana* in being darker and the discal band unf more regular.

*hyrcana kwaja*, nov. (30). The Dark Jewel Blue. Baluchistan. R.

8a (3b). Unh discal spot in 7 very much nearer to the spot in 6 than to the basal spot in 7. Androconia absent except in *astorica* and *semiargus*, 16 and 12 ribbed.

*Astrarche* Group.

8 (9a). Upf ♂ pale blue, with a narrow diffused border and 3 discal spots in addition to the spot end cell: ♀ brown. Below leaden grey, discal markings F much enlarged as compared with typical *cytis*: spot in 3 F and H markedly shifted out: no metallic or orange spots.

\**cytis laspura*, nov. (24-26). The Spotted Argus Blue. Chitral. R.

9a (8). Upf no discal spots other than spot end cell.

9 (10a). Unh the 2 subtornal spots black with metallic scales and orange crowned. Above dark brown. Below discal markings very prominent.

α. Above no bronzy tinge. Unf discal spots conjoined. Unh spot near base lc faint.

*iris hanna*, nov. (25-29). The Jewel Argus. Baluchistan. NR.

β. Above dark bronzy brown. Unf discal spots separate. Unh spot near base lc prominent.

\**iris ashretha*, Evans. (25-29). Chitral. NR.

10a (9). Unh no metallic scales.

10b (12a). Below with sub-marginal orange band.

10 (11). Below greyish white, no green suffusion at base and all spots clear: unh spot in 6 shifted out of line. Above ♂ ♀ dark brown with spot end cell F and orange sub-marginal spots appearing, complete in ♀, more or less so in ♂.



**H22. Polymmatous.—The Meadow Blues. (Plate 27)—contd.**

\**astrarche*, Berg. (25-30). The Orange-bordered Argus. Chitral—Kumaon. NR. (= *medon*, Auct.).

11 (10). Below rather dark brown with extensive green scaling from the base H, concealing the basal spots. Unh bar end cell triangular and prominently white edged, often continued as a white streak to mid termen, discal spots may be absent. Above ♂ ♀ dark brown, spot end cell F faint.

*epiron jermyni*, Swin. (28-32). The Streaked Argus. Chitral—Gilgit. R. (= *eumedon*, Auct.).

12a (10b). Below no orange band.

12 (13). Below discal spots regular, marginal markings prominent, no green scaling: unf coppery brown: unh white. Above ♂ ♀ dark brown, with spot end cell F.

*astorica*, Tyt. (29-31). The Astor Argus. Astor. R.

13 (12). Below discal spots small and regular, becoming obsolete tornally, marginal markings obsolete, prominent green basal scaling. Above ♂ dull violet blue with broad borders: ♀ brown. Unh spot end cell nearly white.

*semiargus annulata*, El. (28-32). The Chumbi Argus. Chumbi Valley, Sikkim. NR.

14a (2b). Unh spot end cell white or absent. Androconia present.

14b (21). Unh margin not broadly white.

14c (20). Unf discal spots parallel to termen, if present.

14d (16a). Unh with elongate white spots.

*Pheretes* Group.

14 (15). ♂ above purple blue. Androconia 16 ribbed. ♀ brown, rarely with basal blue scaling. Below very variable: unf spots may be black or white: unh all greenish white or all brown or only centrally so, metallic green suffusion present or absent, spots usually large, rarely small and black.

α. Rather smaller and paler.

*pheretes lehana*, M. (24-28). The Mountain Blue. Chitral—Kumaon over 12,000 ft. NR.

β. Larger and darker.

\**pheretes pharis*, Fawcett. (26-30). Sikkim, Chumbi. NR.

15 (14). ♂ above shining sky blue, rarely with chequered cilia. Androconia 14 ribbed. Otherwise as *pheretes*.

*asiatica*, El. (24-28). The Azure Mountain Blue. Sikkim over 12,000 ft. R.

16a (14d). Unh with at most small rounded spots, ground colour mostly green. Androconia 10-13 ribbed.

*Galathea* Group.

16 (17a). Above ♂ ♀ dark brown: unh no discal spots and with more or less prominent tornal metallic spots.

*younghusbandi*, El. (28-30). The Chumbi Green underwing. Sikkim, Chumbi. R.

17a (16). ♂ above blue: unh usually with discal white spots.

17b (19). Unf no white suffusion.

17 (18). ♂ above dusky violet blue shading to a broad dark border, 4 mm: on H blue colour usually confined to base. ♀ plain brown. Unf brown: unh green to margin, spots faint.



H22. *Polyommatus*.—The Meadow Blues. (Plate 27)—*contd.*

\**omphisa*, *M.* (30-32). The Dusky Green underwing. Kashmir. Ladak. Lahoul. NR.

18 (17). ♂ above dark border sharply defined.

α. ♂ bright blue, border 2 mm. Unh green to middle of wing and the white spots usually beyond on a pale grey ground. ♀ brown.

*metallica chitralensis*, *Tyt.* (26-30). The Small Green underwing. Chitral, Madaglasht, Shishi, Warsangol, etc. NR.

β. ♂ purple blue, border 1 mm. Unh green to margin. ♀ with bases above blue.

*metallica gilgitica*, *Tyt.* (26-30). Chitral, Shandur, Baroghil. Gilgit, Astor, Chilas. NR.

γ. ♂ rather dusky pale blue, border 3 mm. Unh green to margin. ♀ brown.

*metallica metallica*, *Fd.* (30). Kulu. Kokser. Lahoul. Rupshu. R.

19 (17b). Unf suffused white particularly towards apex. ♂ above violet blue, border not over 2 mm. Larger.

α. ♂ above border 1 mm increasing tornally to 2 mm. ♀ usually plain brown. Unf diffused subternal dark patches.

*galathea chitralica*, *Evans.* (34-39). The Large Green underwing. Chitral. Chilas. NR.

β. ♂ above border 1mm, even throughout. ♀ with large orange marginal spots above tornus F and H. Unf the discal spots are sometimes white (*var. nycula.*).

*galathea galathea*, *Blanch.* Kashmir—Kumaon. NR. (= *nycula*, *M.*).

γ. Smaller and darker.

*galathea depreei*, *Tyt.* (32). Ladak. NR.

20 (14c). Unf discal spots in 2-5 very large, conjoined and curved towards the margin in 2-3, no marginal markings, ground colour lead grey, may be a small spot in 6. Unh powdered green, unmarked. ♂ above pale shining rather powdery blue, border broad. ♀ bases blue. *Androconia* 10 ribbed.

Cytlarus Group.

*cytlarus aeruginosa*, *Stg.* (28-30). The Western Green underwing. Baluchistan. N. Waziristan. NR.

21 (14b). Unh margin broadly white. Upf prominent spot end cell. *Androconia* 12 ribbed, confused by irregular lines cross-wise.

Orbitulus Group.

α. Above ♂ uniform greenish blue, border 2 mm: ♀ brown. Unf grey with prominent black spots, spot in 2 under cell spot, always spot in 1b. Unh outer third white, centre third brown, base more or less metallic green, large white spot end cell, conjoined spot 6-7 (rarely with black centres), sometimes small black spot base 1c: occasionally a discal row of conjoined white spots separated from white margin.

\**orbitulus walli*, *Evans.* (28-30). The Greenish Mountain Blue. Chitral. R.

β. Above dark brown overlaid greenish blue scales, less extensive or absent in ♀. Upf with discal white spots in ♀: uph faint in ♂, prominent in ♀. Unf discal spots absent in ♂, white in

H22. *Polyommatus*.—The Meadow Blues. (Plate 27)—*contd.*

♀, obscurely black centred. Unh discal white spots merged into white border.

*orbitulus astorica*, *Tyt.* (28-30). Astor. Goorais. Chilas. VR.

γ. Above similar, bluish white spots prominent. Unf spots black, may be faint.

*orbitulus jaloka*, *M.* (25-28). Kashmir, Tragbal, Scinde and Liddar Valleys. R.

δ. Above variable, white spots faint or very large: in ♀ may be dark centred. Unf spots black, may be absent, sometimes spot in cell. Unh costal and discal spots more or less separated from the border.

*orbitulus leela*, *DeN.* (25-30). Ladak VR.

η. As last, but unf spots are white.

*orbitulus ellisi*, *DeN.* (25-30). Pangl. VR.

22a (1a). Eyes hairy.

22 (23a). Androconia shaped as in previous groups, large broad oval, 12 ribbed. Unh discal spot in 7 not in line with bar end cell, much nearer termen and approximate to spot in 6, also discal spot in 1c out of line, nearer margin. ♂ above dark bright blue, border a thread: ♀ brown, bases and discs dusted dark blue scales. Below fawn grey, marginal spots faint, unf no spot in cell, unh cell spot minute and no spots on dorsum.

*Iolas* Group.

*gigantea gilgitica*, *Tyt.* (38). The Gilgit Meadow Blue. Gilgit. Chitral. VR. (*iolas*, in error).

23a (22). Androconia quite different to rest of genus, long narrow with a long footstalk and 5-10 ribs. Unh discal spot in 7 over spot end cell and spot in 1c in line.

23b (26a). Androconia with 8-10 ribs. Below discal spots F and central discal spots H with their irides coalesced: unh basal spot in 1c always present.

*Actis* Group.

23c (25). Unf never a spot in the cell. Unh basal spot in 1c in line with the other basal spots: tornal spots may be metallic scaled.

23 (24). Unh discal spot in 6 central between spots in 5 and 7: 4 basal spots in line, marginal orange spots more or less well developed.

α. ♂ above bright blue, border very narrow, marginal black spots present on H: upf no spot end cell and unf no spot in 1b. ♀ above with very large sub-marginal orange spots F and H and black marginal spots H: on F the discs may be orange.

\**sarta sartoides*, *Swin.* (35-38). The Brilliant Meadow Blue. Chitral. R.

β. ♂ above dull dusky blue evenly extended to the dark brown border: upf spot end cell: unf discal spot in 1b. ♀ above varying from plain brown to an approach to *sartoides* with orange sub-marginal spots above.

*sarta rupala*, *Tyt.* (32-36). Astor. R.

γ. ♂ above blue much more restricted.

*sarta gooraisica*, *Tyt.* Goorais. R.

H22. *Polyommatus*.—The Meadow Blues. (Plate 27)—*contd.*

24 (23). Unh discal spot in 6 nearer spot in 7, basal spot in 1c slightly shifted in, marginal orange spots obsolete. Upf prominent spot end cell.

a. Above ♂ rather dull blue, border 1-2 mm, which on H is broken into large marginal spots.

*devanica gracilis*, Evans. (24-30). The Dusky Meadow Blue. N. Chitral. R.

β. Above ♂ bases only dusky blue, border 4 mm or more, the blue colour often extending as a streak through the cell to the apex.

*devanica devanica*, M. (30-34). S. Chitral. Kashmir. Ladak. R.

25 (23c). Unf usually a spot in cell and unh basal spot in 1c out of line, nearer base. ♂ above bright shining blue, veins outwardly black, border very narrow and well defined. Below rather dark grey. Unh sub-marginal lunules well defined and dull orange spots in 1b-3: a more or less well defined widening white streak from below spot end cell to mid termen. ♀ dark brown with a spot end cell F and H dull orange subternal spots. Differs from *actis* in having larger spots unh.

*actis bogra*, nov. (28-34). The Baluchi Meadow Blue. Baluchistan over 7,000 ft. R.

26a (23b). Androconia 5-6 ribbed. Below discal spots well separated: unh no metallic scales.

26b (28). Unf normally a spot in cell and unh 4 basal spots.

26 (27). ♂ above uniform lilac blue, border linear, blue colour never shades to border, nor are the veins darkened, never a black spot end cell F. ♀ very variable, from plain brown to dusky blue with or without marginal orange spots. Unf discal spots in 4, 5, 6 on a curve: unh discal spot in 6 usually rather nearer to spot in 5.

a. Above bright lilac blue. Below spots very small and uniform, no white patches.

*\*icarus fugitiva*, But. (30-32). The Violet Meadow Blue. Baluchistan. C.

β. Above duller. Below more variable, marginal orange spots better developed and traces of white patches H.

*icarus chitralensis*, Swin. (30-36). Chitral. C.

27 (26). ♂ above very variable as to colour and width of border, which may be diffused and the veins just before it usually darkened. ♀ rarely any blue above and marginal orange spots usually well developed. Unf spots in 4, 5, 6 in a straight line or nearly so and unh spot in 6 usually nearer to spot in 7.

a. ♂ pale silvery blue, narrow, well defined border. Below very pale fawn, spots small and red sub-marginal markings faint, no white patches or whitening of the sub-marginal markings.

*eros bilucha*, M. (28-30). The Common Meadow Blue. Baluchistan (Hanna, Bogra). Zhob (Torgar). NR. at 6,000-7,000 ft.

β. Darker shining blue with broader borders and a prominent spot end cell F: on H more or less prominent sub-marginal black spots, conjoined to the dark border. Below darker.

*eros shingara*, nov. (26-28). Baluchistan, Ziarat and Shingarh (Zhob) at 8,000 ft. R.

H22. *Polyommatus*.—The Meadow Blues. (Plate 27)—*contd.*

γ. Rather larger than *bilucha*, ♂ upf border broader. Below spots better marked, also the red sub-marginal spots.

*eros wazira*, nov. (30-33). Waziristan, Razmak. C.

δ. Similar: ♂ has a tinge of violet in the blue. Below sub-marginal red spots prominent.

*eros drunela*, Swin. (30-33). Kurram, Samana, Khyber. NR.

η. Below the sub-marginal markings more or less whitened, but the dark lunules always traceable, the red spots often absent. Unh spot end cell white, usually with a dark centre, thence a more or less pronounced white streak to mid termen. ♂ above typically shining violet blue with a broad fuscous border, varying to clear blue with a very narrow border. Apparently 2 broads at 5-9,000 ft. and one brood at higher elevations.

*eros droshana*, Swin. (30-40). Chitral. C.

ξ. Below sub-marginal markings completely whitened and very prominent: unh spot end cell white. ♂ shining blue with a narrow or broad border.

*eros janeta*, Evans. (34-36). Hunza, Batura, Khunjerah, and Ghujerab glaciers. Baltistan. NR.

ε. Below greyish white, markings obsolete except for dark spot end cell F and white cell spot H, green basal suffusion H very prominent. ♂ above tinged violet, border a thread.

*eros hunza*, GG. (36-38). Hunza, Shimshal Glacier. Pamirs. R.

θ. ♂ above shining blue, turning whitish before the narrow border: uph traces of black sub-marginal spots. Below pinkish brown to grey, sub-marginal spots completely whitened or may show reddish.

*eros stoliczana*, Fd. (30-34). Ladak. NR. (= *drasula*, Swin.).

ι. ♂ spring form brilliant violet blue, summer form clear shining blue, border 1 mm. Below red sub-marginal spots prominent: unh spot end cell white and the central white streak more or less prominent.

*eros pseuderos*, M. (32-35). Astor. Gilgit. Kashmir. Murree. NR at 6-8,000 ft.

κ. ♂ above bright metallic blue, border F  $1\frac{1}{2}$  mm. Below grey, sub-marginal red markings nearly or quite obsolete and white markings very prominent, especially the central streak.

*eros ariana*, M. (34-38). Kashmir, Kunawur, Spiti, Kangra, Kulu over 8,000 ft. NR. (= *sutleja*, M.).

λ. ♂ above shining blue, border a thread. Unf no spot in cell. Unh green basal suffusion up to discal spots, which are white as well as the spot end cell: sub-marginal spots obsolete in ♂, showing red in ♀.

*eros dux*, Riley. (30-35). N. Kumaon, 11,000 ft. NR.

μ. ♂ varying from pale lilac blue with a narrow border and rather obsolete markings below to a rather deep brilliant blue with black marginal spots uph. Below from dark grey to chalky white, the red sub-marginal spots prominent or absent; spot end cell white, the central white streak absent, but often a white central patch beyond the discal spots.

*eros arene*, Fawcett. (30-35). Sikkim, Chumbi. NR.

**H22. Polyommatus.—The Meadow Blues. (Plate 27)—contd.**

28 (26b). Unf never a spot in cell. Unh the upper basal spot in 7 only showing, sometimes also spot in cell. ♂ above pale silvery blue, border a thread to broad and diffused.

*poseidon florenciae*, Tyl. (34-40). The Silvery Meadow Blue. Baroghil Pass, Chitral. Hunza. VR.

**H23. Chilades.—The Lime Blue. (Plate 27).**

Above blue. Below pale brown with large spots arranged as usual; unf with an additional costal spot in the angle formed by the junction of v9 with v7, always a spot in 1b; unh always spot base 1c and the discal spot in 6 shifted in. In DSF unh there is a large clouded discal patch. Androconia 9 ribbed.

α. Smaller. ♂ above dark border linear. ♀ WSF dark brown, bases metallic blue; DSF rather pale blue with a broad border.

\**laius laius*, Cr. (26-30). The Lime Blue. Ceylon, India, N. Burma—Moulmein. C. (= *kandura*, *varunana*, M.).

β. Larger. ♂ above dark border diffused inwards and uph with prominent marginal black spots. ♀ paler blue with broad borders. Below markings much darker and more pronounced; seasonal difference not nearly so marked.

*lilus tavoyana*, Evans. (30-35). Tavoy. R.

**H24. Zizeeria.—The Grass Blues. (Plate 27).**

Small low flying insects. Below pale grey to brown; unh always a spot base 1c under spot mid cell. Androconia only in *galba* and *maha*.

1a (3a). Unh with tornal metallic scales.

1 (2). ♂ ♀ above dark brown. Unh with a marginal row of jewelled metallic spots; basal and costal spots black, rest dark brown; unf no spot in cell or on costa internal to the discal band.

α. Uph dark marginal spots in ♂ faint and not orange crowned; below brown and jewelled spots not prominently orange crowned.

\**trochilus putli*, Koll. (15-22). The Grass Jewel. Ceylon. S—NE India. Burma. C.

β. H marginal spots prominently orange crowned above and below; paler below.

*trochilus trochilus*, Freyer. (15-20). N.W. India. C.

2 (1). ♂ above violet blue, narrow dusky border: ♀ brown. Unh 2 prominent jewelled black tornal spots, 2 black costal spots and spot in cell: remaining markings below grey, catenulated. Androconia 18 ribbed.

*galba phiala*, GG. (20-24). The Persian Grass Blue. Idak, Waziristan. R.

3a (1a). Unh no jewelled spots or orange markings. ♂ above blue.

3b (6). Unh discal spot in 6 midway between spots in 5 and 7, always a discal spot in 1c.



**H24. Zizeeria.—The Grass Blues. (Plate 27)—contd.**

3c (5). Unf with a spot in cell and a spot in 7 on costa between the discal spot in 6 and the spot end cell.

3 (4). Larger. ♂ above pale blue, border broad. ♀ dark brown with more or less basal blue suffusion. Unf often small spot base 1b. Androconia 20 ribbed.

a. Below markings small and on H nearly obsolete. ♂ above very pale silvery blue.

*maha ossa*, Swin. (26-30). The Pale Grass Blue. S—Central India. VC.

β. Below markings always more prominent. ♂ above usually darker and very variable.

*maha maha*, Koll. Baluchistan. Kurram. Central—N. India. Burma. VC. (= *chandala*, M. : *diluta*, Fd. : *squalida*, But.).

4 (3). Small. ♂ above dark blue with broad borders. ♀ normally plain brown, but may have some basal blue suffusion. Below grey with the spots all small, black and well defined.

\**lysimon*, Hub. (18-24). The Dark Grass Blue. Ceylon, India, Burma. C. Nicobars. (= *karsandra*, M. : *mora*, Swin.).

5 (3c). Unf no spot in cell; 2 small costal spots on either side of the spot end cell. Below white, markings all small, black and well defined; marginal markings unusually sharp. ♂ above dark blue with a broad border; ♀ plain brown.

*gaika*, Trimen. (16-24). The Tiny Grass Blue. Ceylon, India, Burma, Andamans, All Nicobars. C.

6 (3b). Unh discal spot in 6 shifted in, not in line with spots in 5-7, no costal spots or spot in cell. ♂ above dark blue with broad borders; ♀ brown with more or less basal blue suffusion.

a. Below spots prominent; unf discal series very large.

*otis decreta*, But. (19-20). The Lesser Grass Blue. Ceylon. S.—Central India. C.

β. Below spots small, often nearly obsolete; spots unf never more prominent than the spots unh.

*otis otis*, F. (19-26). N. India—Burma, Andamans, Car and Central Nicobars. C. (= *sangra*, M. : *indica*, Mur. : *dryina*, Chap.).

**H25. Euchrysops.—The Plains Cupids. (Plate 27).**

Blue above with catenulated discal spots on a grey ground below : on unh spots at base, along costa and at tornus are black, latter crowned metallic scales and orange; remaining spots below much paler brown : unf no spot in cell. Androconia 10-14 ribbed.

1 (2a). Unh discal band tornally broken into separated spots, the last spot near the dorsum in 1b far removed from the next spot in 1c : 2 nearly equal black tornal spots, no spot in 1c below cell spot. ♂ above violet : uph 2 black tornal spots.

\**cnejus*, F. (25-33). The Gram Blue. Ceylon. India. Burma. C. Andamans NR. Central and South Nicobars. R. (= *theseus*, Swin.).

2a (1). Unh discal band tornally more united, the spot in 1b conjoined or approximate to the spot in 1c.



**H25. Euchrysops.—The Plains Cupids. (Plate 27)—contd.**

2 (3). Unh tornal black spot in 1c prominent and sub-equal to the spot in 2: never a spot near base 1c. Uph single spot near tornus above tail.

a. Much brighter blue and below markings more prominent.

*contracta nila*, Evans. (20-25). The Small Cupid. Ceylon. NR.

β. Duller above and below.

*contracta contracta*, But. S—C India—Sind, Baluchistan, N.W.F. Province and Punjab. C.

3 (2). Unh tornal spots may be absent, but if spot in 1c is present, it is much smaller than the spot in 2: often a spot near base 1c against spot mid cell.

a. No distinct DSF. Larger and brighter blue. Uph marginal spot in 2 prominent, but there a series of dusky spots on either side and a white line beyond them.

*pandava lanka*, Evans. (30-35). The Plains Cupid. Ceylon. C.

β. WSF similar, smaller and darker: uph only single marginal spot in 2. DSF in area covered by S. W. Monsoon (i.e. S. India, U. P., Bengal, N. Burma) is very different below: the discal band is widened and conjoined to the spot end cell, so as to form a very broad dark band and the tornal spots H are absent (= *bengalia*). In S. Burma the seasonal forms are nearly alike.

\**pandava pandava*, Hors. (25-30). India. Burma. Andamans. Nicobars. C. (= *bengalia*, DeN.: *nicola*, Swin.).

γ. In N. W. India beyond the extreme monsoon area there flies a very small DSF with the markings below almost obliterated and a comparatively prominent whitish band between the discal and sub-marginal markings. Apparently no WSF.

*pandava minuta*, nov. (32). Sind. Baluchistan. N. W. F. Province. Punjab. NR.

**H26. Lycænesthes.—The Ciliate Blues. (Plate 27).**

Above uniform blue, no border; ♀ brown with blue bases and dark marginal spots H. Below with broad catenulated bands. Unh prominent orange crowned black marginal spot in 2. No androconia.

1 (2). Unh spot base 7 large, of the ground colour; discal band more or less continuous. Unf discal band continuous or broken at v2. ♂ above dark purple blue. H rounded.

a. Paler and markings below more regular.

*emolus emolus*, God. (28-35). The Ciliate Blue. S. India. Sikkim—Burma. C. (= *bengalensis*, M.).

β. Darker, smaller. Unf discal spot in 1b inclined inwards, pointing to spot end cell.

*emolus andamanicus*, Fruh. (25-28). Andamans. NR.

2 (1). Unh spot near base 7 small and black; discal band broken at v6. Unf discal band broken at v3. ♂ above much paler and bluer. H produced. ♂ with long hairs on wings above.

a. Below paler and edges of discal bands very irregular.

**H26. *Lycænesthes*.—The Ciliate Blues. (Plate 27)—contd.**

*lycænina lycænina*, Fd. (24-29). The Pointed Ciliate Blue. Ceylon. S. India. Orissa. R. (= *orissica*, M).

β. Below darker; edges of discal bands much more regular.

\**lycænina lycambes*, Hew. Sikkim—Burma. Andamans. NR.

**H27. *Catachrysops*.—The Forgetmenot. (Plate 27).**

Above pale blue, border narrow. Below pale grey with catenulated band; unf the discal band broken into 2 portions and at the upper end there is a small spot on the costa internal to the band. Unh a single very large orange crowned spot at tornus. Androconia dark, wedge shaped, 9-12 ribbed, accompanied by long hairs.

1 (2). Unf spot on costa midway between spot end cell and the discal band. Above ♂ violet blue. Below bands narrow and more catenulated.

\**strabo*, F. (25-35). The Forgetmenot. Ceylon, India, Burma, Andamans, Nicobars. C. (= *usoka*, *didda*, Koll : *kandarpa*, Hors).

2 (1). Unf spot on costa adjoins upper end of discal band. Above ♂ pale silvery blue. Below markings paler, broader, straighter and more confluent.

*lithargyria*, M. (25-35). The Silver Forgetmenot. Ceylon, Assam—Burma, Andamans. Nicobars. NR.

**H28. *Lampides*.—The Peablue. (Plate 27).**

Above ♂ violet blue, frosted over. Below pale brown, marked with fasciæ, no spots, except for 2 black ones crowned orange and metallic at tornus H; marginal lunules F and H; unf with a short tascia in cell, end cell and a discal band: unh basal band, fascia end cell, discal band and a white band beyond. No androconia, but with long white, tapering, black-tipped scales.

\**bæticus*, L. (24-36). The Peablue. Ceylon, India, Burma, C. Andamans, Nicobars. R.

*v. obsoleta*, Evans. Except for the tornal spots H all the marginal markings F and H are absent. Andamans. VR.

**H29. *Jamides*.—The Ceruleans. (Plate 27).**

Above from milky white to deep metallic blue. Below brown with parallel white lines, filled in between as bands in the DSF forms of some species. Unf no basal lines. ♀ with broad dark border and apex F and marginal spots H.

1a (6a). Unf third white line from base continuous from costa to dorsum: fourth white line ends on v3.

1b (3a). Unf fourth white line bent apically.

1 (2) Below ochreous brown or brown, inner sub-marginal line not lunulate, markings dull and narrow. ♂ above brilliant dark metallic blue, border and apex F broadly black, H border narrow;

## H29. Jamides.—The Ceruleans. (Plate 27)—contd.

borders narrower in DSF. ♀ non-metallic blue. Palpi short: no androconia.

a. ♂ upf costa black.

*bochus bochus*, Cr. (25-34). The Dark Cerulean. Ceylon, India, Burma, Andamans. C. (= *plato*, F.: *nava*, Fr.).

β. ♂ upf costa blue, at least at base.

*bochus nicobaricus*, W.M. and DeN. Nicobars. C.

2 (1). Below dark grey, inner sub-marginal line highly lunulate; markings white and prominent. ♂ above rather dark shining blue, border 1mm, even width. ♀ pale blue. Androconia 8 ribbed, very long and enlarged at end.

*coruscans*, M. (27-35). The Ceylon Cerulean. Ceylon. R.

3a (1b). Unf fourth white line from base straight.

3 (4a). Unf no white dashes on the costa above the white lines in the cell. Unh inner sub-marginal white line highly lunulate; orange crown to tornal spot in 2 very large. ♂ above rather pale shining blue, border a thread. ♀ pale blue: uph marginal spots very prominent and inner dark border very lunulate. Androconia long, widening evenly, 8 ribs.

*philatus subdita*, M. (28-35). The Burmese Cerulean. S. Burma. NR.

4a (3). Unf always 2 or 3 white costal dashes internal to the discal lines above lines end cell. Seasonal forms well marked. WSF with white lines on a dark grey or brown ground as usual. DSF filled in dark between pairs of lines, forming broad bands, which on H may be darkened over making them indistinct, while on F the disc between the bands is more or less white. ♂ above very pale bluish white; ♀ similar with broad dark border and apex F. Androconia 14 ribbed, quadrate.

4 (5). ♂ upf border a thread and not dilated at apex; more metallic and shining. A forest insect, not found in the open as next.

*cleodus pura*, M. (27-38). The White Cerulean. Assam-Burma. R. (= *alocina*, Swin.).

5 (4). ♂ upf border a thread at tornus, gradually widening to 1 mm at apex.

a. ♂ above bluer and darker; uph with submarginal spots.

*celeno tissama*, Fruh. (27-35). The Common Cerulean. Ceylon. C.

β. Above whiter; uph no sub-marginal spots.

\* *celeno celeno*, Cr. (27-40). India, Burma. C. (= *elianus*, F.: *ulexis*, Auct.: *conferenda*, But.).

γ. Above as last; uph with sub-marginal spots. No DSF.

*celeno blairana*, Evans. (27-35). Andamans. C.

δ. ♂ above with an inner fuscous border.

*celeno kinkurka*, Fd. (27-32). Car and Central Nicobars. C.

η. ♂ above entirely overlaid fuscous scales, leaving only a narrow pale sub-marginal fascia. Larger.

*celeno nicèvillei*, Evans. (30-37). South Nicobars. C.

6a (1a). Unf third white line from base not continuous from costa to dorsum.

H29. Jamides.—The Ceruleans. (Plate 27)—*contd.*

6b (8a). Unf lower part of second white line from base forms a  $\gamma$  at v4 with the upper second and third lines: a white dash in 3 between the third and fourth lines, which end on v4.

6 (7). Unh orange crown to tornal spot in 2 very narrow. Below markings broad.  $\delta$  above pale shining metallic blue, border a thread:  $\phi$  bluish white, border a thread. Androconia as *philatus*, 8 ribbed.

*lacteata*, DeN. (28-40). The Milky Cerulean. Ceylon. R.

7 (6). Unh tornal spot in 2 and the orange crown very wide: below markings dull and narrow, basally obsolete unh.  $\delta$  above pale shining blue, darkening apically as in *alecto*: upf border even 1 mm: uph apically decreasing row of black marginal spots as in *alecto*.  $\phi$  pale shining blue. Androconia as *philatus*, 10 ribbed.

*ferrari*, nov. (34-40). Ferrar's Cerulean. Central and S. Nicobars. VR.

8a (6b). Unf first and second lines from base continuous across cell to dorsum, third line from costa to v3, fourth line to v4 and apically elbowed. (Specimens of *kankena* from the Nicobars have a tendency to assume the arrangement described in 6b.)

8 (9a).  $\delta$  upf border a thread: uph at most traces of tornal spots. Androconia as in *ferrari*.

a.  $\delta$  above pale shining blue, the white lines from below more or less showing through.

*kankena pseudelpis*, But. (28-36). The Glistening Cerulean. Sikkim to Burma. Andamans. NR. (= *atina*, *crocularia*, *paliassa*, Fruh.).

$\beta$ .  $\delta$  above shining pale blue, frosted silvery plumbeous, opaque.

*kankena kankena*, Fd. All Nicobars. R. (= *rogersi*, Bing.).

9a (8).  $\delta$  upf border about 1 mm, increasing apically (except *kondulana*). No androconia.

9 (10a).  $\delta$  uph with a sub-marginal row of apically decreasing spots.

a. Uph postdiscal fuscous markings visible apically. Only WSF.

*alecto meilichius*, Fruh. (30-40). The Metallic Cerulean. Ceylon. C. (= *elpis*, Auct.).

$\beta$ . Uph postdiscal markings absent. Seasonal forms well marked. WSF pale shining lilac, more or less transparent; below grey to brown, strongly marked. DSF milkier, opaque: below pale ochreous brown faintly marked.

*alecto euryaces*, Fruh. (30-44). S. India. Sikkim to Burma. C. (= *ozea*, Fruh.: *chinee*, Tyl.).

$\gamma$ . Uph postdiscal fuscous markings traceable from v3 to apex.

*alecto fusca*, nov. (40-45). Andamans. NR.

$\delta$ .  $\delta$  above very pale shining bluish white: upf a series of diffuse fuscous strigæ against the sub-marginal line: uph sub-marginal spots more rounded, fuscous postdiscal markings visible apically. Below markings very narrow; unh tornal ocellus and orange crown very large.

*alecto kondulana*, Fd. (34-40). Central and South Nicobars. R.

10a (9). Uph unmarked except for narrow black and white lines at tornus.

**H29. Jamides.—The Ceruleans. (Plate 27)—contd.**

10 (11). Above brilliant shining sky blue, darker than in the last two and everywhere opaque. Below darker than in last. Wings rounded and termen convex.

*cerulea*, Druce (32-35). Assam-Burma. The Royal Cerulean. R. (= *bochides*, DeN.).

11 (10). Upf border diffused. Above dusky purple blue. Wings produced and termen straight.

*cunilda nisanca*, Fruh. (35). The Dusky Cerulean. Karens—S. R. (= *purpura*, Evans).

**H30. Orthomiella.—The Straightwing Blue. (Plate 27).**

Above ♂ dark shining purple, border a thread, cilia chequered and elongated at tornus H; ♀ shining blue, border broad. Below brown with dark catenulated spots arranged as usual; marginal markings nearly obsolete; unf a spot in cell and in 1b below it; unh dorsal half from base to discal band darkened, covering all the markings. No androconia.

\* *pontis pontis*, Elwes. (28-32). The Straightwing Blue. Sikkim—N.E. Burma. R.

♂ *v. putaoica*, Tyt. Uph costa bright shining light purple.

β. Smaller. Wings more pointed. Browner above and yellower below.

*pontis roxorea*, Fr. N. Burma, Chin Hills. VR.

**H31. Una.—The Una. (Plate 27).**

Above ♂ dark purple brown, border narrow; ♀ sky blue upf with broad borders and uph pale brown with blue scales at the base. Below pale ochreous brown of a peculiar shade, bearing small black spots arranged as usual, marginal markings obsolete; small double spot in cell F, no spot in cell H; the 2 costal spots H more prominent than the rest; all spots tend to obsolescence. No androconia.

\* *usta*, Dist. (24-27). The Una. Assam—S. Burma. R.

**H32. Nacaduba.—The Lineblues. (Plate 27).**

♂ above dark blue with linear borders: ♀ upf discally pale blue or whitish with broad dark border. Below brown with a number of parallel whitish lines.

1a (6a). Unf no pale basal lines, only a pair end cell and a discal pair in addition to the marginal markings. Tailed.

Pactolus Group.

1 (2a). Unh prominent round black spot at apex. ♂ above purple blue with a more or less prominent diffused discal white area F: ♀ white. Below white, the 2 sub-marginal rows of dark linear spots prominent, other markings pale brown and obsolescent. Androconia elongate with convex base and 16 radiating ribs.



H32. *Nacaduba*.—The Lineblues. (Plate 27)—*contd.*

\* *angusta kerriana*, Dist. (32-35). The White Lineblue. Karens—S. Burma. R.

2a (1). Unh no prominent black apical spot. Below brown, all markings equally prominent. ♀ pale blue or violet.

2b (5). Unf outer discal line does not meet the inner sub-marginal line at v3. Above lines from below not showing through.

2 (3a). Unf inner sub-marginal line broad, diffused and continuous, all markings broad and yellowish: unh inner sub-marginal line consists of broad straight strigæ. Above ♂ dark purple brown, paler in a side light, border narrow but not thread-like. ♀ variable, purple blue, paling outwardly. Wings broad, rounded. Androconia beehive shaped, base concave, 16-20 radiating ribs.

a. Below markings narrower and paler: unf inner sub-marginal line becoming obsolete towards apex.

*pactolus ceylonicus*, Fruh. (34-38). The Large 4 Lineblue. Ceylon. R.

β. Below markings wider and inner sub-marginal line unf complete.

\* *pactolus continentalis*, Fruh. S. India. Sikkim—Burma. R.

γ. Above brilliant violet purple. Below darker, markings better defined.

*pactolus odon*, Fruh. Mergui. R.

δ. Below dark, markings broad and sharp. Unf inner sub-marginal line not broader than other lines.

*pactolus andamanica*, Fruh. Andamans. NR.

η. Smaller. Above more plumbeous. Below markings narrow, pale and rather obscure.

*pactolus macropthalma*, Fd. (32-35). Central and South Nicobars. R.

3a (2). Unf and unh inner submarginal line consists of narrow, separate lunules: all markings narrow, more discontinuous and whiter. Wings produced at apex F and tornus H.

3 (4). ♂ above plumbeous blue, more or less violet in a side light. Unf the upper edges of the inner sub-marginal and outer discal lines are close together. Androconia circular with convex base and 16-20 parallel ribs.

a. Unh tornal ocellus normal.

*hermus nabo*, Fruh. (30-35). The Pale 4 Lineblue. Ceylon. S. India. Sikkim—Burma. NR.

v. *sidoma*, Fruh. Unh upper discal area darkened. NR.

β. Unh tornal ocellus enlarged. ♀ pale shining blue extensive.

*hermus major*, nov. S. Nicobars. R.

4 (3). ♂ above dark shining violet purple, no plumbeous tinge. Unf upper edges of the inner sub-marginal and outer discal lines more separate. Androconia as in *hermus* but broader and the ribs are radiating.

a. Unh tornal ocellus normal.

\* *vajuvu vajuvu*, Fruh. (30-35). The Violet 4 Lineblue. Sikkim—Burma. NR.

β. Unh tornal ocellus enlarged. ♀ blue area darkened and restricted.



H32. Nacaduba.—The Lineblues. (Plate 27)—*contd.*

*vajuvā varia*, nov. S. Nicobars. R.

5 (2b). Unf outer discal line meets inner sub-marginal line at v3, appearing as a continuous line from costa to dorsum. Below sub-marginal lines enclose 2 rows prominent dark spots: markings rather broad, white and continuous on a pale brown ground. ♂ above pale blue, lines from below show through. Much smaller; wings rounded. Androconia pegtop shape, 20 radiating ribs.

\* *pavana*, Hors. (26-28). The Small 4 Lineblue. Tavoy—S. Burma. Andamans. NR.

6a (1a). Unf an additional pair of lines in cell, near base.

6b (19). Unh black marginal spot in 2 conspicuously larger than the tornal spot.

6 (7a). Uph and unh 2 prominent black tornal spots, orange crowned unh. Below pale grey, markings wide, sub-marginal lines highly lunulate: unf basal pair of lines usually to v1. ♂ above rather pale blue. Tailed. Androconia 14 ribbed.

Ancyra Group.

\* *ancyra aberrans*, El. (27-29). Felder's Lineblue. Karens—S. Burma. Tillanchong, Nicobars. R.

7a (6). ♂ uph no tornal spots or only showing through by transparency: ♀ a single spot. Unh usually only the black spot in 2 prominent, the orange crown faint and narrow.

7 (8a). ♂ apex F produced and pointed, termen straight: H produced and termen straight. Tailed. Below lines pale brown and no darkening between: unf basal pair to v1. Androconia with 8 irregular ribs.

Helicon Group.

a. ♂ above dark shining violet blue. ♀ plain brown, prominent black tornal spot uph and some obscure whitish sub-marginal spots. Below rather pale ochreous brown.

*helicon viola*, M. (22-25). The Pointed Lineblue. Ceylon. S. India. R.

β. ♂ below plain brown, no ochreous tinge. ♀ above may be plain brown, but more usually smalt blue with broad borders.

\* *helicon merguiana*, M. Sikkim—Burma. NR.

γ. Below ochreous brown of a darker shade than *viola*. Larger.

*helicon brunnea*, nov. Andamans. NR.

δ. Below as *merguiana*, but larger and unh the tornal ocellus much enlarged.

*helicon kondulana*, nov. Kondul, S. Nicobars. R.

8a (7). ♂ apex F may be produced, but the termen is rounded at least at the apex.

8b (13a). Below the spaces between the discal lines not darker than the ground. Tailed. Androconia circular—quadrate, 13-17 ribs.

Berenice Group.

8c (10a). ♂ wings produced, termen F straight in middle.

8 (9). ♂ shining violet blue, markings from below clearly showing above (except in *nicobarica*): discs not clothed with specialised hair-like scales. ♀ bases normally shining pale blue and discs white. Below markings narrow, regular and prominent.

a. ♂ above centrally paler.

## H32. Nacaduba.—The Lineblues. (Plate 27)—contd.

\* *kurava prominens*, M. (32-38). The Transparent 6 Lineblue. Ceylon. C.

β. ♂ uniform, comparatively pale.

*kurava canarica*, *Toxopeus*. (30-34). S. India. NR. (= *belli*, *Toxopeus*, DSF).

γ. ♂ uniform, comparatively dark.

*kurava euplea*, *Fruh.* (30-34). Sikkim—S. Burma. Andamans, Car and Central Nicobars, NR. (*ataranica* and *evansii*, *Toxopeus*, DSF).

δ. ♂ above non-transparent. Unh tornal ocellus much larger.

*kurava nicobarica*, *Toxopeus*. (32-36). South Nicobars. R.

9 (8). ♂ much darker violet blue, opaque: disc covered with specialised white hairlike scales, easily seen with a hand lens. ♀ bases purple blue, no white on disc. Below markings duller and more irregular.

a. Smaller and darker.

*beræ minima*, *Toxopeus*. (28-32). The Opaque 6 Lineblue. Ceylon. NR.

β. Larger and paler.

\**beræ gythion*, *Fruh.* (30-34). S. India. Sikkim—Burma. NR. (= *akaba*, in error.).

10a (8c). ♂ wings rounded, termen convex: discs more or less covered hairlike scales.

10b (12). Below the postdiscal lunules zigzagged, particularly in 4 and 5 F and H.

10 (11). ♂ above rather dark shining blue, very slightly transparent. ♀ purple bases, no white. Below markings narrow and well defined.

*calauria evansii*, *Toxopeus*. (30). The dark Ceylon 6 lineblue. Ceylon. R.

11 (10). ♂ above pale shining violet, much more transparent, border wider than usual: termen F highly convex. ♀ mostly white, bases very pale shining blue. Below markings broad and conspicuous. Very variable in size.

*ceylonica*, *Fruh.* (18-30). The Pale Ceylon 6 Lineblue. Ceylon. C. (= *atrata*, M., invalid: *sinhala*, *Ormiston.*).

12 (10b). Below the postdiscal lunules not zigzagged, at least on F.

a. ♂ above frosted violet blue. ♀ bases shining blue, no white. Below markings narrow.

*berenice ormistoni*, *Toxopeus*. (22-30). The Rounded 6 Lineblue. Ceylon. NR.

β. ♂ above much darker. ♀ bases pale purple. Below markings narrow and often obscure.

*berenice plumbeomicans*, *WM. and DeN.* (24-30). Tavoy—S. Burma. Andamans. NR.

γ. Unh tornal ocellus much enlarged. ♀ bases pale purple.

*berenice nicobarica*, *WM. and DeN.* (25-30). All Nicobars. C.

13a (8b). Below the spaces between the discal lines filled in as dark bands.

Nora Group.

13b (16a). Tailed.

H32. *Nacaduba*.—The Lineblues. (Plate 27)—*contd.*

13 (14a). Below rather dark brown, bands F broad and nearly black: H bands black at base, discal band and band end cell coalesced to form a large black discal area. ♂ above pale shining violet blue, with a broad border. ♀ upf lower discal area and base upf pale metallic blue. Androconia pegtop shape, 12 ribs.

\**aluta coelestis*, DeN. (23-25). The Banded Lineblue. Kumaon—Burma. Andamans. R.

14a (13). Below bands narrow, only slightly darker than the ground. ♂ above dark purple blue or purple brown with very narrow border. Below pale to dark brown with or without an ochreous tinge of varying intensity. ♀ plain brown, sometimes with a bluish lower discal patch F. Androconia spatulate, 16 ribs.

14 (15). Unf basal band confined to cell, discal band not below v2 or sometimes a dot in 1b.

*bhutea*, DeN. (25-28). The Bhutya Lineblue. Sikkim—Assam. Karens. NR.

15 (14). Unf basal and discal bands continued normally to v1. Below very variable, may be dark brown with white lines or yellow or grey with dark bands.

\**nora nora*, Fd. (18-25). The Common Lineblue. Ceylon. India. Burma. Andamans. C. (= *ardates*, M.: *kodi*, Evans.).

β. Unh the tornal ocellus much enlarged as is always the case with *Nacadubas* flying in the Nicobars.

*nora dilata*, nov. All Nicobars. NR.

16a (13b). Tailless. Above similar to *nora*. Androconia as *nora*.

16b (18). Unf base not darkened. Below as *nora*.

16 (17). Cilia uniform brown throughout.

a. Seasonal forms very alike: below brown, bands only slightly darker than ground, very irregular on F. ♀ brown, base F more or less blue or violet blue. Unf basal band to v1.

\**dubiosa indica*, Evans. (22-26). The Tailless Lineblue. Ceylon. India. C.

β. WSF similar. DSF ♀ below pale ochreous with dark bands and on H prominent marginal spots increasing in size to costa, spot at apex being as large as the tornal spot in 2: unf basal band not to v1: above plain dark brown, traces of blue scales at base F.

*dubiosa sivoka*, Evans. Sikkim—Burma. C.

γ. As last but DSF ♀ below bright yellow and marginal spots H absent.

*dubiosa fulva*, Evans. Andamans. R.

17 (16). F cilia white at apex. Unf basal band confined to cell.

a. Small and faintly marked below.

*noreia noreia*, Fd. (22-25). The White-tipped Lineblue. Ceylon. N. Burma. VR.

β. Larger and more prominently marked below.

*noreia hamptoni*, DeN. (26-28). S. India—Mussoorie. VR. (= *topa*, Evans.).

18 (16b). Unf basal  $\frac{1}{2}$  black: otherwise very like *bhutea*.

*ni*, DeN. (26). DeNiceville's Lineblue. Karens—S. Burma. R.

H32. *Nacaduba*.—The Lineblues. (Plate 27)—*contd.*

19 (6b). Unh marginal spot in 2 and tornal spots small and equal. ♂ above rather dull pale violet blue, border linear. Below pale brown, bands not darker than the ground, white lines faint. ♀ plain brown, may have a whitish discal area F. Tailless. Androconia very peculiar, like very long dumb-bells, 4 ribs.

Dana Group.

\**dana*, DeN. (24-28). The Dingy Lineblue. Ceylon. S. India. Kumaon—Burma. Andamans. NR. (= *dima*, Rhé Phil.).

H33. *Thestor*.—The Coppers.

Above red with a brown border, indented on F and broad brown base H. Unf pale red with conspicuous black spots and a grey border. Unh grey with narrow dark dashes arranged in pairs in bands. Tailless. ♂ apex F pointed. ♀ termen highly convex.

*callinachus*, Evers. (27-30). The Red Copper. Baluchistan. R.

H34. *Lycæna*.—The Coppers. (Plate 27).

Mostly copper coloured above and spotted as *Polyommatus* below.

1a (6a). H termen excavated between vs1 and 2.

1b (3a). Unf lower discal spots 1b-3 not in line, spot in 2 shifted prominently out, ground colour orange with a brown border. Upf copper red, broad border, spotted as unf. Uph dark brown with sub-marginal red band. Unh grey brown with reddish margin. Tailless.

1 (2). Unh spots prominent, discal series resting outwardly on a white band and the red sub-marginal band is bordered on both sides by black spots. Unf brown margin even and sub-marginal black spots complete. ♂ upf unsullied copper; ♀ basal half dark brown; uph with faint purple suffusion.

\**pavana*, Koll. (37-40). The White-bordered Copper. Kashmir—Kumaon. C.

2 (1). Unh spots minute, no white band or sub-marginal spots; unf apex broad grey brown. Uph often with small bluish discal spots. ♂ upf more or less suffused dark scales. Very variable.

α. Small, pale. Brown suffusion usually scanty.

*phleas stygius*, But. (26-30). The Common Copper. Baluchistan.—Chitral and Ladak. C. (= *eleus*, F. : *timeus*, Cr. : *baralacha*, M.).

β. Larger. ♂ Upf brown suffusion intense, leaving only the base metallic copper.

*phleas indicus*, Evans. (28-34). Outer Himalayas. Kashmir—Kumaon. C.

γ. Large, pale but bright. Brown suffusion scanty: upf veins black.

\**phleas flavens*, Ford. (30-34). Interior Himalayas to Sikkim, S. E. Thibet. C.

H34. *Lycæna*.—The Coppers. (Plate 27)—*contd.*

3a (1b). Unf lower discal spots in 1c-3 in line.

3 (4a). Unh reddish brown with 2 narrow discal pale lines, pale line end cell and 2 or 3 basal black spots; markings very obscure. Above ♂ shining purple with dark border and prominent spot end cell, marginal orange lunules at dorsum F and along margin H. ♀ above dark brown, outer area F orange with blue-edged black spots. Unf orange with blue edged black spots. Tailless.

\**tseng mandersi*, El. (31-35). The Chinese Copper. Shan States. VR.

4a (3). Unh white, prominently spotted.

4 (5). Unf spot in 2 line with spots in 1b and 4; white, more or less overlaid yellow. ♂ above brilliant golden copper, unspotted and border 1 mm, widening at apex and macular on H. ♀ yellow, fully spotted, base F and entirely on H suffused dark scales.

a. Tailed: paler.

*thetis lampon*, Led. (32-36). The Golden Copper. Baluchistan. VR.

β. Tailless: brighter.

\**thetis aditya*, M. (32-36). Chitral—Ladak. R.

5 (4). Unf spot in 2 in line with spot in 1b and spot end cell. Below both wings white with a somewhat diffused sub-marginal reddish band. Tailed. ♂ above purple brown basal two-thirds purple glossed, spots from below show faintly on F and end cell H; ♀ dark brown, upf outwardly more or less orange and with orange marginal spots H.

*phœnicurus*, Led. (28-35). The Baluchi Copper. Baluchistan. R.

6a (1a). H termen evenly rounded.

6 (7). Unh grey with prominent and regular spots and a red sub-marginal band spotted on either side. ♂ ♀ above purple brown, basally purple glossed, upf with a spot end and mid cell. Unf orange, discal spots small, regular, becoming obsolete posteriorly; sub-marginal spots small.

a. Tailed. Paler above and below.

*caspius susanus*, Swin. (29-35). The purple Copper. Baluchistan. R. (= *transiens*, Auct.).

β. Tailless. Darker above and below.

\**caspius evansii*, DeN. Chitral. R.

7 (6). Unh entirely verdigris green, spotless or with very tiny basal and discal spots. Unf orange with green border; in ♂ the orange area partly or wholly suffused green; discal spots in pairs in echelon, but upper pair shifted right in. Above ♂ bright copper, border  $1\frac{1}{2}$  mm, inwardly suffused purple; upf fully spotted and uph prominent spot end cell and discal row. ♀ dark brown, upf more or less orange outwardly. Tailless.

*kasyapa*, M. (30-36). The Green Copper. Chitral—Mussoorie. NR.

v. *zariaspa*, M. (27-32). ♂ above much dusker and entirely suffused purple; upf spots smaller and regular, the lower discal spots not elongated as in typical form and never a spot base 2. ♀ darker, less orange F. Below much bluer. NR.



**H35. Heliophorus.—The Sapphires. (Plate 26).**

Below ochreous with a broad red border H. H usually tailed at v2 or at least toothed.

1 (2a). Unh prominent costal and dorsal black spots near base. ♂ above dark shining violet with a broad border F and red sub-marginal band H. ♀ dark brown, the red sub-marginal fascia continued on F. Below pale ochreous to ochreous brown, a prominent white line inside the red sub-marginal area. Tailed.

\**sena*, Koll. (28-33). The Sorrel Sapphire. Chitral—Kumaon. C.

2a (1). Unh no prominent basal spots (may be minute ones in No. 2). ♀ above dark brown with a broad orange upper discal fascia on F and a red sub-marginal band on H.

2b (4a). Below no markings beyond sometimes a few dots between the base and the red marginal area, which is very dark and continued on to apex F. ♂ above dark shining purple. Tailed.

2 (3). Very variable. ♂ uph border broad, over  $1\frac{1}{2}$  mm; often with an orange area beyond the cell; unh purple much restricted and red margin very prominent. ♂ F apex sharp and termen straight.

*epicles indicus*, Fruh. (28-34). The Purple Sapphire. Kumaon—Dawnas. Middle Andaman. C. (= *latilimbata*, Fruh, WSF: *rufonotata*, Fruh., ♂ var with orange subapical area upf.).

3 (2). ♂ upf border narrow 1 mm and uph orange markings reduced: apex F more rounded. ♀ upf orange band wider.

*kohimensis*, Tyt. (30-36). The Naga Sapphire. Nagas. Tonkin. NR.

4a (2b). Below with a dark discal line and a line end cells, usually obsolete on H, but at least line end cell F traceable: red margin not continued to F and tornal spot F prominent.

4b (6a). H no tail, only a tooth at v2. ♂ above rich deep non-metallic silky blue. Unh DSF the red marginal band irrorated white scales, which in the WSF are confined to the edges.

4 (5). Unf no discal lines in DSF: in WSF a series of fine arched lines, prominent in 2 and 3. Unf no orange area. ♂ DSF uph with red tornal lunules, absent in WSF: in WSF black border continued along costa.

*bakeri*, Evans. (30-34). The Western Blue Sapphire. Chitral—Dalhousie. NR. (= *vernalis*, Ril, DSF.).

5 (4). Unf discal lines straight, prominent and disc flushed with orange. ♂ uph always tornal red lunules. DSF and WSF alike.

*oda*, Hew. (32-36). The Eastern Blue Sapphire. Chumba—Kumaon. NR.

6a (4b). Tailed.

6 (7, 8, 9). ♂ above golden coppery. ♀ uph marginal band widest at v6 and continued at least to v7: marginal lunules wide, 1 mm in 2: grey marginal line only in 1c-2.

a. Comparatively small. Unh black spot in 7 over end cell spot faint or absent.

*brahma brahma*, M. (30-34). The Golden Sapphire. Kumaon—Sikkim. NR.

β. Larger in WSF. ♂ more fiery above. Uph marginal red band better indicated in 6.

*brahma major*, nov. (32-38). Assam. NR.



**H35. Heliophorus.—The Sapphires. (Plate 26)—contd.**

γ. Uph marginal red band prominent in 6 and continued to 7. *brahma mogoka*, nov. (32-36). N. Burma to Mogok. NR.  
 7 (6, 8, 9). ♂ above brassy green. Intermediate in colour, markings and genitalia between *brahma* and *androcles*. May be a hybrid.

*hybrida*, Tyt. (34). The Hybrid Sapphire. Sikkim. Nagas. VR.  
 8 (6, 7, 9). ♂ above brilliant metallic green or blue. ♀ as *brahma* but uph marginal band ends at v6 and is not wider there. Unh DSF irrorated white scales on the red band: in WSF confined to edges.

α. ♂ silvery blue, extending directly beyond cell for about 2 mm.

*androcles coruscans*, M. (30-35). The Green Sapphire. Kashmir—Kumaon. NR. (= *langii*, M, DSF.).

β. ♂ silvery green.  
*androcles androcles*, Hew. Assam—N. Burma (Mt. Victoria). NR. (= *viridis*, Evans.).

γ. ♂ silvery blue barely extending beyond end cell. Uph with only 2 narrow red lunules.

*androcles tytleri*, Ril. Nagas. NR.

δ. ♂ similar, but uph with 5 wide red lunules.

*androcles rubida*, Ril. N. E. Burma. Yunnan. R.

η. ♂ deep azure blue.

\**androcles moorei*, Hew. The Azure Sapphire. Sikkim, Chumbi. Bhutan. R.

9 (6, 7, 8). ♂ above powdered dark metallic green scales.

α. Upf ♂ green colouring as extensive as in *oda*.

*tamu tamu*, Koll. (34-40). The Powdery Green Sapphire. Kumaon—Sikkim. (= *viridipunctata*, DeN.: *hewitsoni*, M.).

β. Upf ♂ green colour much restricted.

*tamu kala*, Tyt. Nagas. Htawgaw, N. Burma. NR.

(Note.—*birmana*, Fruh, described in error = *marica*—Thibet.).

**H36. Neolycaena.—The Lobeless Hairstreak.**

Above dark sooty brown, cilia plain, outwardly white. Unf ♂ dorsal  $\frac{2}{3}$  black, costal  $\frac{1}{3}$  grey: ♀ entirely grey with an obscure irregular discal band of narrow black-edged white strigæ followed by a black postdiscal band, broad dorsally, disappearing apically. Unh grey, obscure black-edged white strigæ end cell and forming an irregular discal band, followed by minute sub-marginal black spots and a terminal white line.

*connæ*, nov. (30). The Baluchi Hairstreak. Baluchistan, 7,000 ft. R. (= *sinensis*, Auct., in error).

**H37. Callophrys.—The Tailless Hairstreaks.**

1 (2-3). Below dull green with a row of small obsolescent discal white spots on H. Above plain dark brown.

*rubi*, L. (28-32). The Green Hairstreak. Baluchistan—Chitral. NR.

**H37. Callophrys.—The Tailless Hairstreaks.**

2 (1-3). Below bright ferruginous, base H darker; a narrow irregular dark discal line. Above rather pale blue with a broad dark border and apex F.

*leechii*, DeN. (30). The Ferruginous Hairstreak. Assam. VR.

3 (1-2). Below dark brown with dark lines across base H, ends cells and 2 across disc, also sub-marginal diffused line H. Above plumbeous blue.

*chalybeia*, Leech. (28-32). The Plumbeous Hairstreak. N. Burma. VR.

**H38. Strymon.—The White-line Hairstreaks. (Plate 26).**

Above dark shining brown. Below pale to dark brown, a narrow discal white line across both wings, inwardly black edged; a more or less obsolete series of black sub-marginal spots, inwardly white edged and a subterminal white line; H tornal lobe and spots in 2 black prominently crowned orange.

1 (2). H single tail at v3. Unh discal line regular; sub-marginal spots obsolete on H and on F only in 2 and 3.

*\*sasanides*, Koll. (28-35). The White-line Hairstreak. Baluchistan—Chitral—Mussoorie. NR.

2 (1). H tailed at vs 2 and 3. Unh white discal line distorted to a W near dorsum.

*mackwoodi*, Evans. (34). Mackwood's Hairstreak. Manipur, N. Shan States. VR. (= *saitua*, Tyt.).

**H39. Listeria.—Lister's Hairstreak. (Plate 26).**

♂ above bright blue, very broad black apex F; ♀ duller. Unh smoky brown, outer  $\frac{1}{4}$  broadly paler and bearing an obscure wide fascia; a pale spot end cell. Unh basal  $\frac{1}{4}$  black, rest reddish brown, very obscurely marked.

*\*dudgeoni*, DeN. (26-28). Lister's Hairstreak. Mussoorie—Sikkim. VR.

**H40. Euaspa.—The Water Hairstreak. (Plate 26).**

♂ ♀ above rather pale blue, broad black apex F and an upper white discal patch F and H; below dark chocolate brown, broad whitish border and marginal white ringed spots orange circled at tornus H. Lobe small.

*\*milonia*, Hew. (30-34). The Water Hairstreak. Murree—Kumaon. NR.

**H41. Thecla.—The Hairstreaks. (Plate 26).**

Mostly metallic green above in ♂. ♀ blue, purple or brown with 2 orange or white discal spots on F. Below usually with dark edged white lines and more or less prominent tornal orange and black spots H. All tailed except No. 17.

**H41. Thecla.—The Hairstreaks. (Plate 26)—contd.**

1a (6, 7a, 12a). ♀ upf basally purple with 2 orange discal spots, end cell and mid 3; uph plain dark brown.

1b (3a). ♂ above dark powdery green, or dull purple; upf black border 3 mm, vs black. ♀ purple colour confined to base, orange spots small. Below brown to ferruginous with broad dark bands consisting of a bar end cell, discal band, marginal and sub-marginal bands; discal bands more or less edged outwardly by a silver line.

1 (2). Unh discal band very broad, coalesced to bar end cell, outwardly silver edged, straight to v2, then zig-zagged to dorsum; inner sub-marginal band lunulate; prominent orange crowned tornal spots. Below rather pale brown, bands dark brown. Unf discal band straight and increasing to costa. Above dark powdery green. Wings produced. ♀ purple absent.

*icuma*, M. (40-45). The Dull-green Hairstreak. Kulu—Kumaon. R.

2 (1). Unh discal band narrow and quite separate from the bar end cell; inner sub-marginal band lunulate. Below markings ferruginous; unf discal band of even width. Above purple. Wings rounded.

a. Below ochreous brown, discal band outwardly silver edged and on F angled at v3; on H straight to v2, thence zig-zagged to dorsum; tornal spots traceable, but very obscure.

*\*bieti dohertyi*, DeN. (40-45). The Indian Purple Hairstreak. Kulu—Garhwal. R.

β. As last, but upf base only violet and uph all dark brown.

*bieti mandara*, Doh. (40). Kumaon. VR.

γ. ♂ above as a, but darker purple. Below very dark brown, silver edging to discal band obsolete; discal band on F evenly curved and on H only slightly zig-zagged at lower end; all markings very deep ferruginous and tornal spots H absent.

*bieti irma*, Evans. (38). Bhutan. R.

3a (1b). ♂ not dull or purple green. Unh tornal orange spots prominent. Wings rounded.

3 (4a). ♂ marked like ♀; upf peacock purple with broad dark brown apex and termen and 2 small yellow discal spots. ♀ duller, orange spots much larger, coalesced. Unf dark brown, powdery purplish white discal band, inwardly silver edged and a sub-marginal white line; in ♀ orange discal spots show as above. Unh dark brown base, broad irregular discal band, and broad sub-marginal band powdery purplish white.

*\*paro*, DeN. (35-38). The Peacock Hairstreak. Bhutan—Nagas. VR.

4a (3). ♂ above metallic green.

4 (5). ♀ as ♂ of last. ♂ below silver white, no sub-marginal markings, dark bar end cells, narrow brown discal band often obsolete on F, and irregular dark brown central markings on H, often obsolete. ♀ unf pale brown, dark discal and sub-marginal markings, separated by a broad silver band; unh as ♂ but markings broader and silver ground, especially towards base, tending to become pale brown.

a. ♂ upf black margin 2 mm to 5 mm at apex.

H41. *Thecla*.—The Hairstreaks. (Plate 26)—*contd.*

\**ataxus ataxus*, Db. (40-46). The wonderful Hairstreak. Murree—Kumaon. R (= *katura*, Hew.).

β. ♀ upf borders much narrower.

*ataxus zulla*, Tyt. Nagas. VR.

5 (4). Below uniform brown, areas between discal and sub-marginal lines not conspicuously paler: ♀ above as *ataxus*.

*letha*, Watson. (40). Watson's Hairstreak. Assam. Chin Hills, S. Shan States. VR.

6 (1a, 7a, 12a). ♀ above metallic sky blue, very faint traces of orange discal spots upf and borders broad. ♂ above bronzy metallic green with a violet sheen, border  $1\frac{1}{2}$  mm to 5 mm at apex; uph a terminal blue line dorsum—v3. Below dark brown with silver white lines; unf line end cell, discal line and two sub-marginal lines; unh line through mid cell to v8, discal line very zigzag at lower end, sub-marginal and diffused marginal lines, tornal orange spots prominent.

*suroia*, Tyt. (40-42). Manipur. The Cerulean Hairstreak. Manipur. R.

7a (1a, 6, 12a). ♀ upf dark brown, upf with large coalesced orange discal spots in mid 3 and end cell, spot in 3 often continued into 2. Below pale to dark brown; unf silver or pale edged dark bar end cell, dark discal band, outwardly silver or pale edged, 2 whitish sub-marginal lines; unh similarly marked and margin powdered whitish scales, tornal spots prominent and area between discal and sub-marginal lines often pale brown or white powdered.

7b (10a). Unh basal line mid 7 present, though often obscure.

7 (8a). Unh basal line in 7 crosses cell, but cell portion may be obsolete especially in ♀; upper end bar end cell nearer basal than discal line. ♀ unf orange spots show prominently and in ♂ there are some obscure orange scales in middle of cell bar. Below dark brown, area between discal and submarginal lines prominently silver powdered. ♂ above metallic green, border  $1\frac{1}{2}$  mm.

*vittata*, Tyt. (41-44). Tytler's Hairstreak. Manipur—Nagas. R.

8a (7). Unh basal line does not enter cell; upper end cell bar much closer to discal line. ♀ unf no traces of orange spots.

8 (9). Above ♂ metallic green; border 1-2 mm, sharp defined.

a. Unh basal area pale, same shade as area between discal and submarginal lines.

*duma duma*, Hew. (42-48). The Metallic Green Hairstreak. Sikkim—Nagas. NR.

β. Unh basal area dark; same shade as between marginal pale area and submarginal line.

\* *duma dumoides* Tyt. (44-48). Manipur. NR.

v. *intermedia*, Tyt. (38-44). Smaller and ♂ border F narrower.

9 (8). Above ♂ powdered dark green scales, border 4 mm, meeting black apex at v4 (Manipur, at v6 in Sikkim.) Below uniform very dark brown, silver discal line prominent, remaining markings obscure and pale postdiscal areas absent.

*zoo*, DeN. 42-46. The powdered Green Hairstreak. Sikkim—Manipur. R.

10a (7b). Unh basal silver line absent.

H41. *Thecla*.—The Hairstreaks. (Plate 26)—*contd.*

10 (11). Above ♂ powdered dark green scales, border 4 mm, meeting black apex at v6. Very like No. 8, but paler below and smaller.

*dōni*, Tyt. (36). The Suroifui Hairstreak. Manipur. VR.

11 (10). Above metallic green with sharp defined border. Below silvery fawn colour, area between submarginal and discal lines conspicuously paler nearly white, silver lines absent. Uph ♂ terminal metallic blue scales, dorsum—v3.

*kabrua*, Tyt. (36-40). The Kabru Hairstreak. Manipur, Nagas. R.

12a (1a, 6, 7a). ♀ above more or less rather pale blue with 2 large whitish spots end cell and mid 3. Below grey brown to silvery bluish, marked as in last group.

12b (18). ♂ metallic green with well defined black border.

12c (17). H tailed.

12d (15-16). Unh discal band straight and continuous from v2 to costa.

12 (13-14). Below grey brown, not silvery. ♂ above border even and broad, 2 mm, F and H. ♀ only traces of blue on F and H all dark brown. Below markings very even; H tornal orange spots prominent.

*birupa*, M. (38-40). The Fawn Hairstreak. Simla—Kumaon. NR.

13 (12-14). Below greyish white, not silvery. ♂ above border F as last. H narrower and irrorated bluish scales. ♀ blue colour extensive F and H. Unh markings pale and diffuse, no tornal orange spots H.

*jakamensis*, Tyt. (40-42). The Jakama Hairstreak. Manipur, Nagas. R.

14 (12-13). Below bluish silvery. ♂ F border narrower, even.

a. Larger. ♂ border H as broad as on F and no blue scales on it. ♀ H blue colour much restricted.

\* *syla syla*, Koll. (42-45). The Silver Hairstreak. Safed Koh. Chitral—Kumaon. C. (= *triloka*, Hannyngham).

β. Smaller. ♂ border H narrower than on F and irrorated blue scales. Below markings narrower, tornal orange spots H obscure. ♀ uph blue colour extensive, usually to termen.

*syla assamica*, Tyt. (36-38). Sikkim—Manipur. R.

15 (12d, 16). Unh discal line very irregular, much bowed out opposite end cell. ♂ above margin very narrow. ♀ and below as No. 14 β.

*kirbariensis*, Tyt. (36-38). The Kirbari Hairstreak. Manipur, Nagas. R.

16 (12d, 15). Unh discal line broken into semi-detached streaks, bowed in opposite end cell. Unf discal line also of detached streaks. ♂ ♀ above as No. 15, but uph with a blue terminal line on either side of tail.

*paona*, Tyt. (46-47). The Paona Hairstreak. Manipur. VR.

17 (12c). Tailless. ♂ ♀ above as No. 15, border in ♂ broader. Below as No. 16, markings smaller and often obscure; no tornal orange markings.



**H41. Thecla.—The Hairstreaks. (Plate 26)—contd.**

*khasia*, DeN. (36-38). The Tailless Metallic Green Hairstreak. Assam—Manipur and Nagas. R.

18 (12b). ♂ as ♀. Tailed. Above blue colour extensive; H margin narrow containing a narrow pale blue line running along entire termen. Below white, not silvery; F discal band black, also submarginal band, which ends in 2; very large spots in 1b and 2; other markings pale brown; H tornal orange spots prominent.

\* *siha*, DeN. (35-38). The White-spotted Hairstreak. Murree—Kumaon. R.

**H42. Chaetoprocta.—The Walnut Blue. (Plate 26).**

Above ♂ ♀ dark shining purple, border and apex broadly black, broader in ♀. Below white, marked as in H 41-14; bands on H and end cell F pale and obscure: discal band F black also marginal spots F, that in 1b being very large. ♀ with a prominent tuft of closely set yellow hairs at end of abdomen. Lobe fairly well developed and H angled at v3.

\* *odata*, Hew. (32-36). The Walnut Blue. Chitral—Kumaon. C.

**H43. Amblopala.—The Chinese Hairstreak.**

Above ♂ ♀ metallic blue with broad dark brown borders and orange discal spot in 4-5 F. Unf pale brown, apex and margin chestnut, a silver bar end cell and a silver discal line. Unh chestnut, a central silver Y band from mid costa to tornus.

*avidienus*, Hew. (32). The Chinese Hairstreak. Naga Hills, VR.

**H44. Curetis.—The Sunbeams. (Plate 27).**

♂ above golden red: ♀ with red or white discal areas. Below silvery white with obscure dark bands.

1a (3a). Below not covered with minute black dots: discal and postdiscal bands parallel to each other and to the termen: unh discal band continuous and well beyond end cell: unf portion of discal band in 6 pushed in. Upf marginal band not continued along dorsum.

Thetis Group.

1 (2). ♀ with white discal areas. ♂ DSF upf border narrow and angled at apex; uph border a thread. ♂ WSF borders broader and evenly arched at apex F resembling *saronis*. Below markings faint, but visible clearly by transparency.

*thetis*, Drury. (40-48). The Indian Sunbeam. Ceylon. S. India—Bengal. NR. (= *phædrus* and *æsopeus*, F.: *terricola*, Hors.: *cinysa*, Cr., WSF: *arcuata*, M., WSF).

2 (1). ♀ with orange discal areas. ♂ with comparatively broad border, evenly arched on F and just continuing along the dorsum in 1a.



H44. Curetis.—The Sunbeams. (Plate 27)—*contd.*

*a.* Larger and paler.

*saronis gloriosa*, M. (44-48). The Burmese Sunbeam. Sylhet—S. Burma. NR.

*β.* Smaller and darker.

*saronis saronis*, M. (40-46). Andamans. NR.

*γ.* Smaller still. ♀ upf with obscure dusky red discal area : uph only a dusky whitish area towards apex.

*saronis obscura*, nov. (36-44). Car and Central Nicobars. NR.

*δ.* Similar to *saronis*, but smaller.

*saronis nicobarica*, Swin. (36-44). S. Nicobars. NR.

3a (1a). Below sparsely covered with minute black dots (easily seen with a hand lens), some of which are brought together to form the markings, which are not composed of short lines as in the *thetis* group. Unf the discal band oblique, pointing to the apex : unh discal band shifted in at v6. ♂ upf discal band turned in along the dorsum at v2.

Bulis Group.

3 (4a). Unf discal band outwardly bordered by well defined lunules and not coalescing with the postdiscal band at v6 : markings in 6-7 pushed in together : very like *saronis*. Wings rounded, dark borders very broad : ♂ uph base and tornus broadly darkened. ♀ with orange areas, more restricted than usual : on H bar end cell not separated and red area usually not to costa.

*sperthis*, Fd. (30-40). The Rounded Sunbeam. Mergui. R.

4a (3). Unf discal band not bordered by well formed lunules, straighter : the band coalesces with the postdiscal band at v6 : spot in 6 shifted in well beyond spot in 7. F termen straight or concave and H tornus produced : in ♀ F is rounded at tornus and concave above.

4b (6). Unh the portion of the discal band in 6, 7, not in line with the bar end cell, seen best by transparency from above.

4 (5). ♀ with white discal areas, bluish at base F. ♂ with broad borders, usually no tooth end cell F : uph base and tornus broadly darkened, leaving only a red discal area, which usually reaches the costa. H evenly rounded to v4 and then straight to tornus. F varies from slightly concave and angled at apex to sinuous and apex rounded.

*bulis*, Db. and Hew. (35-45). The Bright Sunbeam. Mussoorie—S. Burma. NR. (= *discalis* and *stigmata*, M. : *aesopus*, Dist.)

5 (4). ♀ with orange discal areas, broad, especially on H, where the black bar end cell is usually prominent. ♂ above much brighter red and borders narrower, rarely a tooth end cell F. : on H entirely red except for a narrow black margin widening tornally, brown shaded dorsum and a prominent short, narrow, basal streak above the cell. In S. Burma there is a tendency for the border upf to run evenly to v1 as in the Malayan form *felderi*, Dist, which flies with *malayica*. F termen straight or slightly concave : H termen evenly rounded.

*malayica*, Fd. (40-45). The Malayan Sunbeam. Karens—S. Burma. NR.

6 (4b). Unh the portion of the discal band in 6, 7 in line with the bar end cell. Very variable. ♂ normally with a comparatively

**H44. Curetis.—The Sunbeams. (Plate 27)—contd.**

broad border F and prominent tooth end cell: sometimes the border is very broad, obscuring the tooth and running along the dorsum to the base. Uph the border widens rapidly to the broad dark dorsal area and there is a more or less prominent basal streak above the cell, which may be coalesced with the dorsal dark area, leaving only a small discal red patch: often the H is entirely red. ♀ with much larger white areas than in *bulis*, usually a prominent tooth end cell F and a bar end cell H. Outline of wings very variable: F termen straight or concave, apex falcate or angled: H may be as in *bulis*, but more usually sharply angled at v4 and concave to dorsum.

*acuta dentata*, M. (40-50). The Angled Sunbeam. S. India. Pachmarhi. Mussoorie—Dawnas. C. (= *angulata*, M.).

**H45. Iraota.—The Silverstreak Blue. (Plate 27).**

Above bright shining blue with broad borders. Below dark ferruginous; unh a silver streak and discal spots; unh usually a broad irregular basal silver streak, obscure zigzag discal markings and usually ochreous towards termen.

1 (2). ♂ tail only at v1; ♀ also tail at v2; margin more or less crenulate. Unh silver streak never to margin and sometimes completely absent. ♀ purple with broad borders.

a. ♂ above green rather than blue; unh silver streak, when present, clouded ferruginous.

*timoleon nicevillei*, But. (40-48). The Silverstreak Blue. Ceylon. R.

β. Similar, but greenish blue areas wider.

*timoleon arsaces*, Fruh. S. India—Central Provinces. NR.

γ. ♂ above deep blue. Unh silver streak, if present, clear.

\**timoleon timoleon*, Stoll. Orissa—Mussoorie—Shan States. NR. Andamans. R. (*maecenas*, F.: *nita*, Koll.).

2 (1). ♂ tail at vs 1 and 2; ♀ with an extra tail at v3. ♂ above deeper blue; ♀ entirely dark brown. Below silver markings more extensive and wider; F discal spot in 4 elongate, nearly to termen; H a basal streak along costa and usually the broad irregular streak reaches termen and throws down a bar across end cell; discal zigzag silver markings prominent, margin broadly pale ochreous.

*rochana boswelliana*, Dist. (40-48). The Scarce Silverstreak Blue. Manipur—Burma. R.

**H46. Horsfieldia.—The Leaf Blue. (Plate 27).**

Above blue or purple with dark borders. Below dark ferruginous in ♂, rather pale brown in ♀, with a prominent black discal line across both wings, more or less irrorated with dark scales, presenting a leaflike appearance as in *Kallima*.

1 (2). ♂ above purple with border of even width.

a. Smaller and darker. ♀ in 2 forms, typically small blue to purple.

*anita naradoides*, M. (42-52). The Purple Leaf Blue. Ceylon. NR.

**H46. Horsfieldia.—The Leaf Blue. (Plate 27)—*contd.***

- ♀ v. *darana*, M. Above plain brown. R.  
 β. Larger. ♀ above smalt blue. ♂ above border narrower.  
 \**anita dina*, Fruh. (50-55). S. India—Bengal and Assam. NR.  
 γ. Very large, with broader borders.  
*anita gigantea*, Tyt. (54-62). Manipur. NR.  
 δ. Similar to *dina*. ♀ more purple.  
*anita arracana*, GrS. (50-55). N. Burma—Bassein. NR.  
 (*anita*, Hew, a slightly different race from Siam).  
 η. ♂ bluer above and darker below. ♀ blue area larger and extending to H.  
*anita andamanica*. Ril. (50-55). Andamans. NR.  
 2 (1). ♂ above rich deep blue; ♀ purple blue, always more extensive, especially on H. ♂ above border narrows to dorsum.  
*narada tuooana*, M. (50-55). The Blue Leaf Blue. Dawnas.—S. Burma. R. (= *andersoni*, M.).

**H47. Thaduka.—The Many-tailed Oakblue. (Plate 27).**

- α. ♂ ♀ above pale silvery blue, black border =  $\frac{1}{2}$  the wing F and H. Below base F and all H very dark brown, outer half F pale brown, with a discal band of black spots: H spotting very obscure; a prominent white spot mid cell F and usually some metallic green spots at bases F and H and above the tails.  
 \**multicaudata kanara*, Evans. (35-45). The Many-tailed Oakblue. S. India R.  
 β. Above darker. Unf cell spots and unh spot base 7 dark.  
*multicaudata multicaudata*, M. S. Burma. R.

**H48. Mahathala.—The Falcate Oakblues. (Plate 27).**

- 1 (2). H margin smooth. ♂ above rich deep blue with narrow borders: ♀ purple with broad borders. Below rufous brown, markings obscure: F white lines across cell and a broad continuous dark discal band; H a pale fascia from mid dorsum to apex and a similar sub-marginal fascia, obscure spots at base.  
 \**ameria*, Hew. (38-42). The Falcate Oakblue. Bengal—Burma. R.  
 2 (1). H margin crenulate. ♂ ♀ above blue with broad borders and black veins; costa upf chequered black and white. Below pale to dark brown: H with obscure confused markings as in H 47; F with 6 white bars across the cell, a highly waved postdiscal line and a square large pale patch mid 1, with 2 smaller square spots in 2 and 3; H some tornal metallic green scales.  
 \**atkinsoni*, Hew. (35-40). The Crenulate Oakblue. Manipur—S. Burma. R.

**H49. Amblypodia.—The Oakblues. (Plate 28).**

Above all shades of blue and purple and even metallic green. Below normally with the same pattern. Unf 3 spots in the cell, including the spot at the end of the cell; often with a costal spot

H49. Amblypodia.—The Oakblues. (Plate 28)—*contd.*

in 10 over the spot end cell and more rarely with one or more spots nearer the base in 11 and at the bases of 10 and 11; a more or less continuous discal band, which may be broken at v4 and may or may not be continued to v1; a spot at base 2 and a dark area at base 1b; a sub-marginal dark line. Unh a more or less prominent spot or half spot at base 8; a basal row of 4 spots (7, cell, 1c and dorsum); a central row of 3 spots (7, cell and 2); a continuous band made up of spots from the costa to dorsum, the shape of which varies in different groups, more especially as to the shape and position of the two uppermost spots (in 7 and 6), whether the dislocation at v2 is partial or complete and whether the band runs continuously to the dorsum or not; more or less prominent tornal green or blue metallic scales and a single broad or 2 narrow sub-marginal lines. May be tailed at v2 and lobed at the tornus H.

1a (72a). Unf with 3 normal dark cell spots.

1b (16a). Unh with the discal spots in 7, 6 and 5 with their centres in line, more or less rounded; spots in 7 and 6 in echelon, inner edge of spot in 6 more or less in line with the outer edge of the spot in 7 (see also Nos. 27 and 28). Tailed or tailless.

1c (7a). Unf a well defined dark area under the cell, defined outwardly by an irregular white line across 1b from origin v2: the dark area entire or more or less divided in two: discal band broken or angled at v4, upper part curved. Unh tornal green scales diffused. Tailed and lobed.

Anthelus Group.

1d (4a). Unf cell spots abnormal, not confined to cell. H produced in first two.

1 (2-3). Unf spot end cell extended to costa and 3 prominent whitish costal spots, including upper spot of discal band; unh discal band completely broken at v2 and continuous to dorsum. Below chocolate with on H a broad white band from base cell to apex and below this band the ground colour is much paler. Above ♂ ♀ pale blue, border F  $\frac{1}{2}$  mm at tornus to 5 at apex, H no border.

\* *subfasciata*, M. (40-46). The White-banded Oakblue. Dawnas —S. Burma. NR.

2 (1-3). Unf basal and central spot extended to v12 and 2 prominent costal spots; unh an additional costal spot at base 8, discal band partially broken at v2 and discontinuous to dorsum. Below ochreous brown, spots on F and about costa H very dark. ♂ above metallic blue changing to purple, border F  $\frac{1}{2}$  mm at tornus to 3 at apex; ♀ paler metallic blue, borders broad; tornus H fuscous.

a. Above paler. Below pale ochreous. Unh other than costal spots obscure.

\* *anthelus anthelus*, Db. and Hew. (50-60). The Multi-spotted Oakblue. Dawnas. NR.

β. Above and below much darker. Unh all markings prominent. *anthelus anthea*, Evans. Tavoy—S. Burma. NR.

3 (1-2). Unf central cell spot only extended to v12 and a single costal spot in 10 over spot end cell; unh discal band completely

H49. Amblypodia.—The Oakblues. (Plate 28)—*contd.*

broken at v2 and continuous to dorsum. Below pale ochreous brown, spots large, rounded and only slightly darker than the ground, apex and outer part of H may be whitish. ♂ above pale metallic blue changing to violet, no border; ♀ more violet, border broad and a spot at end cell F.

*anarte*, Hew. (62-65). The Magnificent Oakblue. Manipur—S. Burma. VR.

4a (1d). Unf cell spots normal and at most a single costal spot. Camdeo Group.

4b (6). Unh central spot mid 1c not markedly larger than the spot mid cell.

4 (5). Unf discal spots in 2-3 not elongated towards spot end cell. ♂ above pale silvery metallic violet blue, border very narrow. ♀ basally pale sky blue, outwardly whitish with a broad border: unf variable series of subapical and discal spots, which may appear upf or be entirely absent. Below pale to dark brown, markings separate or conjoined and the discal band unf may be entirely separated at v4.

\* *opalina*, M. (38-48). The Opal Oakblue. Assam—S. Burma. Siam. VR. (= *karennia*, Evans, an abnormally pale and large specimen. *azata*, DeN. and *ædius*, Hew. may be the Malayan and Javan forms).

5 (4). Unf discal spots in 2-3 elongated towards spot end cell. ♂ upf pale violet blue with a discal white area, border a thread and usually a prominent spot end cell. ♀ with a large spot end cell upf conjoined to the costal border. Below variable.

a. Large. Unf discal spots well separated. ♀ outwardly whitish.

\* *camdeo camdeo*, M. (52-56). The Lilac Oakblue. Sikkim—Assam. R.

β. Intermediate to next.

*camdeo sebunga*, Tyl. (49-53). Manipur—N. Burma. R.

γ. Smaller and darker. ♀ more uniform violet blue.

*camdeo varro*, Fruh. (42-50). Karens—Ataran, R.

6 (4b). Unh central spot mid 1c markedly longer than the spot mid cell. ♂ above frosted violet blue, turning violet outwardly: no white on disc, no border or spot end cell. ♀ blue or violet blue, sometimes whitish towards apex, borders very broad. Below dark purple brown, with very broad conjoined, white-edged markings: unf discal band not extending usually below v2 and space 1b conspicuously white outwardly: unh space 6 more or less prominently white.

*dispar diluta*, nov. (52-58). The frosted Oakblue. Maymyo—Ataran. R. (differs from *dispar*, Riley, from Siam, in having no white on the disc upf in the ♂).

7a (1c). Unf no well defined basal dark area below the cell, but often a more or less obscure dark spot under the centre cell spot. ♀ upf no spot end cell, borders broad.

Epimuta Group.

7b (10a). Tailed.

7c (9). Upf no area of apparently modified scales on the disc.

H49. *Amblypodia*.—The Oakblues. (Plate 28)—*contd.*

7 (8). Below hairbrown. ♂ above metallic violet blue, no border. ♀ violet blue. Unf usually a spot base 9 between the two outer cell spots and sometimes 2 spots in 10: discal band of separated spots angled at v4, upper part curved.

a. ♂ much paler and more shining: below darker.

\* *agnis pallida*, nov. (56-58). The Large Metallic Oakblue. Karens—Tavoy. R.

β. ♂ much darker, border traceable. Below paler.

*agnis agnis*, Fd. Mergui—Malaya. R.

8 (7). Below rosy purple. Unf discal band continuous or slightly broken at v2, no costal spot. Unh discal band partially broken at v2 and continuous to dorsum, tornal green scales diffused. ♂ above dark purple blue, border F  $\frac{1}{2}$  mm: uph costa broadly fuscous: ♀ with broad borders.

a ♀ purplish blue.

*suffusa suffusa*, Tyl. (40-50). Tytler's Rosy Oakblue. Manipur—S. Shan States. R.

β. ♀ light blue, not purplish.

*suffusa atarana*, Tyl. Ataran. Dawnas. R.

9 (7c). ♂ upf with a discal area of modified scales. Unf discal band variable, may be broken at v4, only sinuous, or spot in 4 may be shifted out; usually costal spot in 10. Below hair brown, markings dull; unh discal band completely dislocated at v2 and continuous to dorsum; tornal green scales sharply defined, lobed. ♂ above metallic violet blue, becoming violet outwardly; ♀ with broad borders, no spot end cell, but with ill-defined spots beyond conjoined to the costal border.

a ♂ above pale silvery blue, costa and apex F pale violet. ♀ pale blue.

*atosia aria*, nov. (42-46). The Tailed Disc Oakblue. Pegu Yoma—Karens. R.

β. ♂ above shining blue, outwardly violet. ♀ blue.

\* *atosia aricia*, Stg. Karens—S. Burma. C.

γ. ♂ above uniform shining violet blue. ♀ violet blue.

*atosia atosia*, Hew. S. Mergui—Malaya. C.

10a (7b). Tailless. Below hair brown, markings dull; unf no spot in 1b and costal spot obscure or absent: unh lobed and tornal green or blue scales sharply defined. Wings rounded and costa F highly arched.

10b (13a). Unh discal band completely dislocated at v2 and continuous to dorsum. Below more or less obscurely purple washed.

10 (11a). Unf costal spot in 10, discal band broken at v4 and usually spot in 4 shifted out. ♂ ♀ above as in No. 9, but border F in ♂ up to 1 mm.

*epimuta elsiei*, Evans. (37-43). The Tailless Disc Oakblue. Tavoy—S. Burma. NR.

11a (10). Unf discal band not dislocated at v4.

11 (12). Unf discal band confluent, bent at v4 and spot in 2 shifted out; darker below. ♂ above shining metallic blue, completely overlaid violet on F, border F  $1\frac{1}{4}$  mm.

\* *metamuta*, Hew. (36-40). The Bicolor Oakblue. Karens—S. Burma. R.



H49. *Amblypodia*.—The Oakblues. (Plate 28)—*contd.*

12 (11). Unf discal band of separated spots, sinuous: spot in 2 not pushed out. ♂ above dark shining blue, no border. ♀ purple blue.

*hypomuta*, Hew. (38-44). The Violet Oakblue. S. Burma. VR.

13a (10b). Unh discal band partially dislocated at v2, more or less continuous to dorsum. Unf no costal spot in 10; discal band bent at v4.

13 (14a). Comparatively pale above. Unf discal band more or less angled at v4.

a. ♂ Pale blue, outwardly violet, border F  $\frac{1}{2}$  mm. ♀ blue, border broad.

\* *moolaiana moolaiana*, M. (38-50). The Pale Arched Oakblue. Karens—Tavoy. R. (= *pastorella*, Doh.: *pagaiensis*, Ollenhach, small form).

β. ♂ uniform shining blue: ♀ darker, borders narrow, traces of spot beyond end cell upf.

*moolaiana maya*, nov. Mergui. Malaya. R.

14a (13). ♂ above dark uniform violet blue. ♀ upf border broad. Below darker and markings more prominent.

14 (15). Border F 1 mm.

*agesilaus*, Stg. (43). The Dark Arched Oakblue. Mergui. VR.

15 (14). Border F a thread.

*amphimuta*, Fd. (43). The Malay Arched Oakblue. Mergui. VR.

16a (1b). Unh discal spots in 7, 6 and 5 with centres not in line, 7 and 6 more or less quadrate, conjoined. (See Nos. 27 and 28).

16b (65a). Unf no spot base 11 between basal and central cell spots.

16c (36a). Unh discal band completely dislocated at v2 and usually continuous to dorsum. Always tailed and F termen never concave just below the apex; lobed.

16d (21a). Unf discal band completely broken at v4, spot in 4 being shifted out of line with the rest; usually a well defined costal spot in 10 and often spot in 11 and at bases of 7 and 10. Unh tornal green scales prominent, though sometimes diffuse.

Atrax Group.

16 (17a). Below dark chocolate, all markings broken up and consisting of small white lines and dashes. Unh discal spot in 6 large, overlapping spot in 5 and end cell, outwardly concave. ♂ above pale metallic silvery blue shading to violet at apex F, border  $\frac{1}{2}$  mm.; ♀ pale blue with broad borders F.

\* *albopunctata*, Hew. (34-38). The White Spotted Oakblue. Karens—S. Burma. C.

17a (16). Below grey brown to ochreous or purple brown with a purple to pinkish wash. Unh discal spots in 7 and 6 conjoined and placed between spot end cell and spot in 5.

17 (18-20). ♂ above dark shining purple blue, border F  $1\frac{1}{2}$  mm to 3 at apex; ♀ shining blue, border F 2 mm to 5 at apex, costal border 1 mm leaving blue over cell, a black area beyond cell conjoined to black apex. Below very distinct, dark purple brown with prominent white edged broad markings, more irregular than

H49. Amblypodia.—The Oakblues. (Plate 28)—*contd.*

usual; F costal spots prominent; 2 zigzag sub-marginal lines. Wings rounded.

\* *aliteus mirabella*, Doh. (36-38). The Purple Brokenband Oakblue. Tavoy—S. Burma. R.

18 (17, 19, 20). ♂ above dark shining purple blue, border  $1\frac{1}{2}$  mm to 3 at apex; ♀ shining blue, border 3 mm, all costa and apex black to v4, a small spot mid 3. Below grey brown to purple brown, markings prominent but much more regular and narrower; unh discal band usually discontinuous at dorsum. Apex F produced and termen straight.

*atrax*, Hew. (32-38). The Dark Brokenband Oakblue. Shan States—S. Burma. NR. (= *aida*, DeN.: *mindaneneis*, BB.).

19 (18, 17, 20). ♂ above shining violet blue, or silvery blue, overlaid violet: border F 1 mm- $1\frac{1}{2}$  at apex. ♀ pale blue, border  $1\frac{1}{2}$  mm-5 at apex,  $\frac{1}{2}$  mm on costa, leaving blue above the cell, the black apex angled at v4. Below rather pale ochreous or grey brown with slight pinkish wash. Very variable above and below.

\* *ariana*, Evans. (35-42). The Pale Brokenband Oakblue. Dawnas—S. Burma. R.

20 (17-19). ♂ above purple, border  $\frac{3}{4}$  mm; ♀ as last. Below ochreous brown to slightly purple brown. Wings much more rounded than in the rest of the group and unh tornal green scales much more sharply defined.

*rafflesii*, DeN. (37-40). Raffles' Oakblue. Tavoy—S. Burma. R. (= *dama*, Swin.).

21a (16d). Unf discal band not much dislocated at v4, spot in 4 never pushed out and never more than a single costal spot (in 10 over the end cell spot).

21b (25a). Of large size, over 45 mm. Unh discal band in 2-5 straight, confluent and directed to the tornal lobe; tornal green scales prominent and usually diffuse; discal spot in 6 with its outer edge oblique and well inside the inner edge of the spot in 5. Unf normally costal spot in 10.

Silhetensis Group.

21c (24). Unf discal band dislocated at v4, lower part shifted in.

21d (23). Below ochreous brown.

21 (22). Unf costal spot in 10 never so wide as the spot end cell; upper part of discal band straight or uppermost spot shifted in. Termen F straight.

a. ♂ above violet blue, border F 2 mm. Below greyish ochreous; bands and spots large and prominent; unh tornal green scales faint or absent.

\* *silhetensis silhetensis*, Hew. (50-56). The Sylhet Oakblue. Sikkim—N. Burma. R. (= *nicevillei*, BB.).

β. ♂ above shining purple blue, border F  $\frac{1}{2}$  mm. Below clear ochreous brown, spots usually small and sharply defined.

*silhetensis arama*, DeN. (50-56). Karens—S. Burma. R.

22 (21). Unf costal spot in 10 very large, as wide as the spot end cell; upper part of discal band arched. ♂ above shining purple blue, border F  $\frac{3}{4}$  mm. ♀ border broad, and may be a spot end cell and a black patch beyond. Unh tornal green scales prominent.

H49. *Amblypodia*.—The Oakblues. (Plate 28)—*contd.*

\* *yendava*, GrS. (46-50). The Singapore Oakblue. Sikkim—S. Burma. R. (= *antura*, *sambra*, Swin. : *adorea*, DeN.).

23 (21d). Below rosy purple to purple brown; unf costal spot in 10 present or absent. ♂ above shining purple blue, border F 1 mm. ♀ paler, border 3 mm, a dark patch beyond end cell.

*apha*, DeN. (46-50). The Vinous Oakblue. Dawnas—S. Burma. VR.

24 (21c). Unf discal band not dislocated at all at v4, may be slightly sinuous there; costal spot in 10 present or absent. Below variable, may be slightly purple washed. ♂ above shining purple blue, border  $1\frac{1}{2}$  mm-5 at apex; ♀ paler, bluer, border  $2\frac{1}{2}$ -7 mm.

\* *adatha regia*, Evans. (48-50). The Large Mergui Oakblue. Mergui. R.

25a (21b). Not larger than 45 mm. Unh discal band in 2-5 more irregular and discal spot in 6 with its outer edge more or less joining inner edge of spot in 5.

Phænops Group.

25b (29a, 31a). Below dull ochreous hair brown. Rather large and wings produced. Unf discal band sinuous, no spot in 10.

25 (26a). Below rather dark brown, markings very wide and prominently outlined white. Unh central row spots enlarged; discal spot in 6 very large, overlaps spot in 5 and usually not up to the spot end cell; tornal green scales diffused. ♂ above shining violet blue, border 1 mm to 2 at apex, veins black, especially on H.

*ace arata*, Tyl. (44). Tytler's Dull Oakblue. Manipur. VR.

26a (25). Below markings dull and narrow.

26 (27a). Unh discal spot in 6 midway between the spot end cell and the spot in 5 or nearer the former; tornal green scales sharply defined, prominent. ♂ above very deep purple blue, border  $\frac{1}{2}$  mm; ♀ paler and borders very broad.

*agrata*, DeN. (44). DeNiceville's Dull Oakblue. Manipur—Burma. R.

27a (26). Unh discal spot in 6 much nearer the discal spot in 5; spots in 7, 6 and 5 in echelon with their centres more or less in line. Below markings very obscure.

27 (28). Unh no tornal green scales. ♂ above bright violet blue, border  $1\frac{1}{2}$  mm; ♀ as next.

*ænea*, Hew. (46). Hewitson's Dull Oakblue. Sikkim—Assam. R.

28 (27). Unh with more or less prominent metallic green scales at tornus. ♀ above dark purple blue, border  $\frac{1}{2}$  mm; ♀ purple blue costal and terminal border F 4 mm and on H blue only about cell.

*khamti*, Doh. (46). Doherty's Dull Oakblue. Sikkim—N. Burma. NR.

29a (25b, 31a). Below rather dark ochreous hair brown with prominent markings and tornal green scales H; rarely a very faint purple wash. Unf usually a spot in 10, discal band variable, may be straight, sinuous or slightly broken at v4; unh discal spot in 6 overlapping spot end cell or intermediate between it and the spot in 5. ♀ purple with broad borders.

H49. *Amblypodia*.—The Oakblues. (Plate 28)—*contd.*

29 (30). ♂ above bright shining deep blue, border F 1 mm. ♀ purple colour extending into the black apex, thereby forming a black patch end cell.

\**aroa*, Hew. (34-40). The Bright Oakblue. Karens—S. Burma. NR. (= *pryeri*, But).

30 (29). ♂ above dark purple blue, border F 1 mm. ♀ purple colour not extending into the black apex. Wings much more rounded.

*brookei*, BB. (38-42). The Roundwinged Bright Oakblue. Dawnas.—S. Burma. R.

31a (25b, 29a). Below with a more or less well developed rosy pinkish to purple gloss. Unf a more or less prominent costal spot in 10.

31b (33a). Unh discal spot in 6 more or less overlapping the spot end cell and the centres of spots in 7 and 6 in line with spot end cell.

31 (32). Unh discal spot in 5 well separated from the spot end cell. Below variable, the rosy pink gloss variable in shade and intensity.

a. Unf discal band usually broad, curved, sinuous, upper portion oblique: Unh tornal green scales prominent. ♂ above bright deep blue, border F  $1\frac{1}{2}$ -2 mm. ♀ shining blue with broad borders. Very variable.

\**alea alea*, Hew. (34-40). The Rosy Oakblue. Karens—S. Burma. NR. (= *selta*, Hew.).

β. Unf discal band straight and narrow. Unh tornal green scales faint. ♂ above bright deep blue, border  $1\frac{1}{2}$  mm. ♀ shining blue.

*alea constanceæ*, DeN. (43). Andamans. VR.

32 (31). Unh discal spot in 5 conjoined to spot end cell or only separated by a double white bar; discal band very irregular. Unf discal band continuous, straight or slightly curved. Below purple brown with a purple glaze: unh tornal green scales rather faint. ♂ above dark shining violet blue; ♀ paler purple blue, border broad and with more or less of a spot end cell.

a. Below uniform. Unh inner sub-marginal line prominently zigzag. ♂ border F 1 mm.

*agaba aurelia*, Evans. (36-44). The purple-glazed Oakblue. Manipur—N. Burma. R.

β. Below patchy, apex and costa F and H except termen, as well as all the markings, with a whitish glaze. Unh inner sub-marginal line obscured. ♂ border F  $\frac{3}{4}$  mm.

\**agaba agaba*, Hew. Karens.—S. Burma. NR.

33a (31b). Unh discal spot in 6 with its inner edge clear of the outer edge of the spot end cell. Unf discal band unbroken and on H discal band in 2-5 very compact. Unh tornal green scales usually faint and diffused.

33 (34-35). Below rather pale purple brown with a purple wash. Unf no spot in 10. Unh basal and central spot unusually small and bar end cell very narrow. ♂ above dark shining violet blue, border 1 mm; ♀ paler purple, a spot end cell F and on H the purple colour confined to the cell.

H49. Amblypodia.—The Oakblues. (Plate 28)—*contd.*

*canaraica*, M. (44-45). The Kanara Oakblue. S. India. R. 34 (33, 35). Below pale grey brown, more or less washed pinkish. Unf with a costal spot in 10, discal band very straight. Unh discal band almost continuous from 2-7. ♂ above dusky purple, border F 2 mm to 4 at apex, H blue to just beyond end cell. ♀ border 3 mm to 6 at apex and on H blue colour absent or with traces at base.

\**alemon*, DeN. (34-40) The Indian Oakblue. S. India—Dun—Dawnas. C. (= *atrax*, Auct and *herwitsoni*, BB).

35 (33, 34). Below pale silky ochreous brown. Unf with costal spot in 10, discal band very straight and a prominent oblique spot in 1b. Unh discal band almost continuous from 2-7. ♂ above dusky purple, ♀ blue; border F 3 mm to 6 at apex, a spot end cell and a whitish streak beyond; on H blue to just beyond cell. Wings produced.

\**alax*, nov. (35-44). The Silky Oakblue. Manipur—Dawnas. C. (= *alemon*, DeN, ♀ nec ♂).

36a (16c). Unh discal band never dislocated at v2. (except No. 52).

36b (50a, 54a). Tailed and F termen never concave just below the apex.

## Centaurus Group.

36c (44a). Unh discal spot in 6 overlapping spot end cell and the spot in 5, its outer edge concave.

36d (39a). Unf discal band continuous, not broken at v4; spot in 10 over end cell obscure or absent.

36 (37a). Unf an oblique discal spot in 1b; unh tornal green scales faint or absent, no lobe or tornal black spots. Below dark ochreous brown, markings obscure; unf markings in cell defined by vertical silver lines, discal band sinuous; unh markings faint, discal spot in 5 close to spot end cell. ♂ above dark violet blue; ♀ paler with broad borders. F apex produced and termen straight.

a. ♂ border F 1 mm. ♂ ♀ paler basally.

*centaurus pirama*, M. (53-62). The Centaur Oakblue. Ceylon, S. India. NR.

β. ♂ border  $\frac{3}{4}$  mm. ♂ ♀ uniform above.

*centaurus pirithous*, M. Kumaon—Assam. NR.

γ. ♂ border  $\frac{1}{2}$  mm. ♂ ♀ uniform above.

\**centaurus centaurus*, F. Burma. NR. (= *helus*, God.: *nakula*, M.).

δ. ♂ border  $\frac{1}{2}$  mm. Bases conspicuously paler, especially in ♀. *centaurus coruscans*, W.M. and DeN. Andamans. NR.

37a (36). Unf no discal spot in 1b or only a faint one in continuation of the discal band. Wings rounded.

37 (38). Below purple brown. Unh discal spot in 5 well separated from the spot end cell, tornal green scales more or less prominent and with a small lobe. Below purple brown with a conspicuous glaze. Above ♂ dark shining blue, border F  $1\frac{1}{2}$  mm increasing to 3 at tornus and apex and on H; ♀ paler, border 4 mm and a black spot end cell.

*paralea*, Evans. (40-45). The Glazed Oakblue. Manipur—Shan States. R.

**H49. Amblypodia.—The Oakblues. (Plate 28)—contd.**

38 (37). Below ochreous brown with prominent markings; unf with a costal spot in 10 and discal band sinuous; unh sharply defined tornal green scales and lobe, discal spot in 5 well separated from the spot end cell. Above ♂ shining purple blue, border F 1 mm.

*cooperi*, Evans. (42-44). Cooper's Oakblue. Mergui. VR.

39a (36d). Unf discal band conspicuously broken at v4, lower spot shifted in and upper part oblique. Unh lobe well developed and always with more or less diffuse tornal green scales.

39 (40a). Unf dark area under cell produced along 1b to the discal band; no costal spot in 10. Unh discal band very sinuous, spot in 5 at right angles to the spot in 4. Below grey brown to dark ochreous brown, markings prominent. Above ♂ dark shining blue; ♀ brighter and paler with broad borders and a spot end cell.

a. ♂ above border F 1 mm.

*amantes amantes*, Hew. (45-57). The Large Oakblue. Ceylon. S. India—Dun—Sikkim. NR. (= *apella*, Swin.).

β. ♂ border upf 4 mm.

\**amantes amatrix*, DeN. Manipur—Dawnas. NR.

40a (39). Unf dark area under cell quite separate from the discal band; usually prominent costal spot in 10. Unh discal spots square, moderately regular, in a stepped line.

40b (42a). ♂ above purple; ♀ uph no blue and on F the broad dark border continued a little along the dorsum.

40 (41). Unh the central cell spot joined to the central costal spot. Below rather pale brown, apex F whitish; H centre of disc and margin shining yellow. ♂ above dark purple, border F 2 mm and a spot end cell; ♀ rather pale purple.

\**singla*, DeN. (44-48). The Yellowdisc Oakblue. Sikkim—Karens. NR.

41 (40). Unh central cell spot never joined to central costal spot. Below ochreous brown to brown with a silky gloss; F apex whitish; H prominently, but sparsely sprinkled white scales, margin and markings more or less shining yellow. ♂ above very dark purple, very nearly black, border F 1 mm, 2 on H; ♀ as last.

\**bazalus*, Hew. (44-48). The Powdered Oakblue. Sikkim—Karens. NR. (= *teesta*, DeN.).

42a (40b). ♂ above green. ♀ with more or less blue colouring on H. Unh bar end cell well separated from the spot in 5.

42 (43). ♂ above bright metallic brassy green, border F under 3 mm. Unh bar end cell narrow. ♀ purple blue with broad borders.

a. Wings rounded. ♂ brassy green, upf border 2 mm at apex to 3 at tornus. ♀ purple blue with broad borders, on F continued along dorsum: on H the cell only purple blue. Below uniform rather pale brown with a silky gloss: tornal green scales H diffused or absent.

\**eumolpus eumolpus*, Cr. (44-50). The Green Oakblue. Sikkim, Nepal, Assam. NR. (= *bupola*, Hew, ♀: *elis*, Fruh. DSF).



H49. *Amblypodia*.—The Oakblues. (Plate 28)—*contd.*

β. A very similar form to *eumolphus* flying in particular areas with *hellenore*, of which it appears to be a dimorphic form. ♀ bluer, dark borders narrower.

*eumolphus tagore*, Fruh. Assam, Manipur, Bassein, Karens. NR.

γ. ♂ apex F much produced; border upf 1 mm at apex to 3 at tornus: brassier green. Below with the apical area F and H whitish. ♀ as last but below always with a faint lilac gloss.

*eumolphus hellenore*, Doh. Assam—S. Burma. NR. (= *viridissima*, Swin.).

δ. Wings rounded. ♂ greener, borders narrower. ♀ purple blue, much more extensive. Below ochreous brown, no silky gloss: tornal green scales H sharply defined and brilliant.

*eumolphus maxwelli*, Dist. Mergui—Malaya. R. (= *farquhari*, Dist.).

43 (42). ♂ above metallic peacock green, border F 6 mm at tornus to 9 at apex. ♀ bright shining blue, border narrower than in ♂ 4 mm and a black spot end cell. Below very dark ochreous brown, ♀ ferruginous brown, markings wider than usual, tornal green scales sharply defined, brilliant.

*horsfieldii eurystenes*, Fruh. (40-46). The Peacock Oakblue. Dawnas—S. Burma. R. (= *basiviridis*, Auct.).

44a (36c). Unh discal spot in 5 outwardly rounded, not overlapping both spot end cell and the spot in 5, usually central, just filling the gap. Unf no spot in 10. Lobed.

44b (46a). Unh more or less overlaid white scales.

44 (45). Below entirely overlaid white scales except for the markings on F and about costa H, which are dark chocolate; unf discal band slightly broken at v4; unh tornal green scales sharply defined. ♂ above dark shining purple, border  $\frac{1}{2}$  mm. ♀ entirely dark brown.

*ormistoni*, Riley. (46). Ormiston's Oakblue. Ceylon. VR.

45 (44). Below apex F and H inside the wavy sub-marginal line and below v8 overlaid white scales, remainder dark chocolate. Unf discal band completely broken at v4 and the discal spot in 3 joining spot end cell; markings prominently outlined white. Unh discal spot in 7 larger than the spot in 6, both prominently chocolate as also are the central and basal spot in 7, which are close together and conjoined to the chocolate area in 8; tornal green scales obscure. ♂ above purple, border F 2 mm to 3 at apex and tornus. ♀ purple, paler, border 4 mm, running along dorsum and very broad at apex; H only cell purple.

\* *bazaloides*, Hew. (44-47). The Tamil Oakblue. S. India, Assam—N. Burma. R.

46a (44b). Unh not overlaid white scales.

46b (49). Below ochreous hair brown; unh tornal green scales prominent, discal band continuous to dorsum.

46c (48). Unf discal band slightly broken at v4.

46 (47). Unf base 1b under cell entirely filled dark brown up to origin of v2. Below markings very large. ♂ apex F pointed; above very deep purple blue, border F  $\frac{1}{2}$  mm and veins brownish. ♀ bright purple blue, border F 1-5 mm at apex, black spot end cell.

## H49. Amblypodia.—The Oakblues. (Plate 28)—contd.

*corinda aceses*, DeN. (50-55). The Ultramarine Oakblue. Mergui. VR.

47 (46). Unf no prominent dark basal area under cell. Below dark ochreous brown. ♂ above shining purple blue, border F  $1\frac{1}{2}$  mm, veins outwardly narrowly black.

*vihara*, Fd. (52). Felder's Oakblue. Mergui. VR.

48 (46c). Unf discal band unbroken but bent at an angle of 140 degrees at v4. Below rather pale ochreous brown. ♂ ♀ alike rather pale blue, border H and at tornus F 2 mm to 6 at apex F.

*woodii*, Ollenbach. (40-50.) Wood's Oakblue. Tavoy—S. Burma. R.

49 (46b). Below pale grey brown turning whitish at apex F and H. Unf spot base 3 joining spot end cell and the spot base 2; discal band broad, continuous, directed to tornus, spot in 3 slightly elongated inwards; dark broad sub-marginal spots in 2 and 3; all markings black, except upper part of discal band, which is whitish. Unh all markings pale, black edged, more markedly so near costa, discal spot in 3 shifted in, joining spot end cell; no tornal green scales. Above pale silvery blue, border F 4 mm; ♀ with black spot end cell.

*alesia*, Fd. (42-44). The Pallid Oakblue. Dawnas—S. Burma. Andamans. R. (= *wimberleyi*, DeN.).

50a (36b, 54a). F termen pointed and sharply concave below the point. Unh discal band discontinuous to dorsum, tornal green scales absent or faint. Tailed or tailless; small lobe.

Rama Group.

50b (53). Tailed.

50c (52). Below markings regular. Unf discal band continuous, slightly broken at v4, at most a single costal spot in 10. Unh discal band not broken at v2.

50 (51). Below pale silky ochreous brown, markings prominent on F, faint on H; unh discal spot in 6 between spots end cell and in 5, not overlapping either. Above ♂ ♀ alike, pale blue, border F 4 mm to 6 at apex, slightly continued along dorsum, a spot end cell and whitish beyond; H border 4 mm, vs blackish. Termen F crenulate.

\* *dodonæa*, M. (38-44). The Pale Himalayan Oakblue. Chitral—Kumaon. C.

51 (50). Below purple brown with a silky gloss. Unh discal spot in 6 large, overlapping spot end cell and spot in 5 and outwardly concave. Above ♂ dark violet blue; ♀ purple with broad borders and a spot end cell F.

a. ♂ above border  $1\frac{1}{4}$ -2 mm and extending slightly along dorsum; on H 3 mm. ♀ border 4-7 mm. and on H blue to just beyond cell. Below markings dull and faint.

*rama rama*, Koll. (38-40). The Dark Himalayan Oakblue. Kashmir—Sikkim. C. (= *querceti*, M.: *violacea*, Rob.).

β. ♂ border F 1 mm and on H just under 1 mm; ♀ purple more extensive. Below markings darker and better defined.

\* *rama ramosa*, Evans. (34-40). Manipur—Dawnas. NR.

52 (50c). Below ochreous with dark irregular markings. Unf 2 costal spots, discal band very irregular and broken. Unh

**H49. Amblypodia.—The Oakblues. (Plate 28)—contd.**

markings rather obscure, discal band completely broken at v2. Wings very produced especially at tornus H. ♂ ♀ above shining purple, border F 4 mm to 7 at apex and a spot end cell; H only purple at base.

*comica*, DeN. (42). The Comie Oakblue. Manipur—S. Shan States. VR.

53 (50b). Tailless. Below ochreous brown, markings inconspicuous and as in No. 51; unf cell spots may be obsolete. Wings rounded. ♂ above dark violet blue, border F 2 mm.; H blue to just beyond cell. ♀ purple with broad borders, a spot end cell F and on H cell only purple.

\* *paramuta*, DeN. (30-35). The Hooked Oakblue. Sikkim—Karens. NR. (= *newarra*, M.).

54a (36b, 50a). Tailless and F not concave below apex. Unh discal band discontinuous to dorsum; unf no costal spot in 10.

Agelastus Group.

54b (59a). Unf discal band straight or slightly curved in at upper end, not angled at v4. Margins slightly sinuous and signs of a tail at end v2.

54 (55a). Unf discal band oblique, decreasing from costa and directed to tornus. Unh central cell spot large, its iris touching the iris of the spot end cell. Below ochreous brown, all markings large and prominent, ringed pale yellow and with pale yellow patches at apex F and on H; unh inner sub-marginal line zigzag, small black lobe and faint tornal green scales. Above ♂ purple with broad borders F and H: ♀ rather pale blue, border F 3 mm. to 5 at apex.

\* *alaconia oherthuri*, Stg. (38-40). The Patchy Oakblue. Karens—S. Burma. R.

55a (54). Unf discal band slightly curved apically, of even width, directed to dorsum. Unh central cell spot small, well separated from spot end cell. Unf often a broad dark area under cell; discal band variable, often very broad.

55 (56a). Unh with tornal green scales. Below ochreous brown. Below markings may be wide and confluent, pale edgings dull. ♂ above shining purple, border F 2 mm to 5 at apex; ♀ brilliant shining blue, border as in ♂.

\* *agelastus*, Hew. (39-42). The Greenedged Tailless Oakblue. Shan States—S. Burma. NR. (= *perissa*, Doh.).

56a (55). Unh no tornal green scales.

56b (58). Below ochreous brown.

56 (57). Expanse over 40 mm.

α. Above rather dusky: ♂ violet blue, ♀ blue: border F 3 mm. to 6 at apex. Below more or less purple washed.

*asopia toungura*, GrS. (42-46). The plain Tailless Oakblue. Manipur—Karens. NR.

β. Above colouring clear, border F slightly & H considerably narrower. Below no purple wash.

H49. Amblypodia.—The Oakblues. (Plate 28)—*contd.*

*zeta*, M. (30-36). The Andaman Tailless Oakblue. Andamans. VR. (= *roona*, M.).

58 (56b). Below pinkish grey, markings prominent. ♂ above shining purple, ♀ pale purple, rather dusky: ♂ border 2 mm, ♀ 4 mm.: H blue colour confined to cell.

*aeta*, DeN. (38). The Dawna Tailless Oakblue. Dawnas. R. 59a (54b). Unf discal band distinctly angled at v4. Margins even.

59b (61a). Below ochreous brown, no purple glaze.

59 (60). Unh no tornal metallic scales. Above purple blue, light and rather dull in ♂, shining in ♀, border 2 mm at tornus to 6 at apex. Below markings consist of very regular rounded spots, particularly in respect of the discal band and its continuation, all in a regular chain, except for the spot in 6, which is slightly shifted in.

*helfæbe*, Doh. (37-40). Doherty's Oakblue. Tavoy—Malaya. VR.

60 (59). Unh with sharply defined tornal blue or green scales. Below dark ochreous brown, with narrow, dull, regular markings. ♂ above dark shining purple blue, border F  $\frac{1}{4}$  mm. ♀ blue, border 4-6 mm.

\* *antimuta*, Fd. (30-36). The Small Tailless Oakblue. Karens—S. Burma. NR. (= *davisonii*, DeN.).

61a (59b). Below glazed purple, no tornal metallic scales.

61b (63a). Below uniform purple brown, markings prominent, edgings faint. H tornus angled and slightly lobed.

61 (62). ♂ above rich shining dark purple blue, no border.

a. ♀ purple blue with very broad borders; 5 mm on F: on H confined practically to cell. Unf discal band more evenly curved.

*arvina ardea*, nov. (40). The Purple Brown Tailless Oakblue. Upper Assam. VR.

β. ♀ rather pale blue, borders 2 mm: apex broadly black, some blue on costa and beyond end cell.

\* *arvina abœ*, DeN. (34-40). Dawnas—Tavoy. R.

62 (61). ♂ above rather pale shining blue, tinged violet, border upf 1 mm to  $2\frac{1}{2}$  at apex: a dark area beyond end cell conjoined at upper end to the apical border, but leaving a small blue area extending into the apical dark area. ♀ very like *abœ*, the dark border broader, curving in on F at lower end and a distinct dark bar end cell.

*adala*, DeN. (36-38). The Ladylike Tailless Oakblue. Dawnas—S. Burma. VR. (= *adulans*, DeN.).

63a (61b). Below not uniform. Unh no tornal green scales or lobe.

63 (64). Unh centre of wing broad yellow, base, margin and all F washed purple over purple brown; unh markings obscure. ♂ border F 2 mm to 3 at apex; ♀ paler, border 3-6 mm.

a. ♂ above dark shining violet blue.

\* *perimuta perimuta*, M. (30-37). The Yellowdisc Tailless Oakblue. Sikkim—Tavoy. NR.

β. ♂ above bright shining metallic blue.

*perimuta regia*, Evans. (36-38). Mergui—S. Burma. NR.

H49. Amblypodia.—The Oakblues. (Plate 28)—*contd.*

64 (63). Unh centre of wing and apex whitish violet, rest rather pale purple brown washed pale purple; unh discal band unusually broad and running to tornus; unh markings well defined. ♂ ♀ above shining metallic blue, purple in a side light, border 2 mm to 5 at apex; H only indications of blue in cell.

\* *epimete duessa*, Doh. (32-38). The Violetdisc Oakblue. Dawnas—S. Burma. R.

65a (16b). Unf with a costal spot base 11 between basal and central cell spots; also costal spots over central and end cell spots. Unh basal and central spots crowded together, irides touching, a prominent spot base 8, discal band completely dislocated at v2 and discontinuous to dorsum.

Ganesa Group.

65b (71). Unf discal band continued full width to v2 and often extending into 1b, usually broken more or less at v4; inner cell spots reaching mv.

65 (66a). Tailless. ♂ ♀ above rather pale blue, border F 3 mm to 6 at apex, a prominent spot end cell on either side of which there is a whitish patch. Unh no tornal green scales. Apex F acute and inner margin much produced, H costa concave, apex pointed, termen straight to v6.

a. Below creamy white, markings F prominently dark brown, but somewhat overlaid whitish; nearly invisible on H.

\* *ganesa ganesa*, M. (32-37). The Tailless Bushblue. Chitral—Kumaon. C.

β. Below bases rather pale purple brown; markings F more prominent not overlaid whitish; H markings prominent.

*ganesa watsoni*, Evans. Assam—Shan States. R.

66a (65). Tailed. Below rather pale to dark chocolate brown with white patches; spots large, prominent, white edged.

66b (69a). Unf discal band more or less broken, but never so that the inner edge of the spot in 4 is in line with the outer edge of the spot in 3.

66c (68). Unf discal spots not so regular as in 68.

66 (67). Unh no prominent white patch mid costa and uph blue colour confined to cell. Unh no tornal green scales. H costa straight and apex sharp.

a. ♂ above dull violet blue, border 3 mm to 5 at apex, prominent spot end cell and a whitish patch beyond. ♀ duller, white area F extending to inside cell.

*paraganesa paraganesa*, DeN. (30-34). The Dusky Bushblue. Kumaon—Bhutan. NR.

β. ♂ above entirely dark brown except for a few scattered blue scales at base F. ♀ blue scaling as extensive as in ♂ of last.

*paraganesa zephyretta*, Doh. Assam—Shan States. R.

67 (66). Unh prominent white patch mid costa, as prominent or more so than the apical patches F and H.

a. Very much as β, but ♂ above purple instead of blue.

*ammon ariel*, Doh. (29-31). The Malayan Bushblue. Assam—N. Shan States. VR.

β. ♂ above pale metallic blue, border 2 mm F and H, to 5 at apex F. ♀ paler and duller. Below dark purple brown rendering

**H49. Amblypodia.—The Oakblues. (Plate 28)—contd.**

white patches very prominent. Wings very rounded. No tornal green scales.

*ammon ammonides*, Doh. (29-31). Dawnas—S. Burma. R.

68 (66c). Unf inner edges of spots in 5 and 6 in line and regular, also inner edge spot in 4 against middle of spot in 3. ♂ above rather dull violet blue, border F 1-2½ mm to 3-4 at apex, extending along the costa. ♀ rather pale blue, border 2½-5 mm, a white patch on either side of the black spot end cell; 1 mm on H and veins widely blackened just before the border. Below rather dark purple brown, white patches more or less prominent and may obscure the markings: unh with tornal green scales.

*birmana*, M. (30-39). The Burmese Bushblue. Assam—Dawnas. NR. (= *arisa*, DeN.: *maymoica*, Tyt.).

69a (66b). Unf discal band completely dislocated at v4, so that the inner edge of the spot in 4 is in line with the outer edge of the spot in 3. ♀ as No. 68 but paler and the white patch on F is larger and extends well into the cell. ♂ above pale violet blue. Unh tornal green scales more or less prominent. Below much as No. 68. F dorsum produced. Uph cilia nearly uniform.

69 (70). ♂ border less than 1 mm on F and H. Below uniform pale brown all over, white patches obscure.

*aberrans*, DeN. (32-38). The Pale Bushblue. Manipur—Shan States. R.

70 (69). ♂ above border 1 mm to 2 at apex F, continued slightly inwards along the veins. Below bases pale brown, rest whitish. Uph cilia chequered white at end of each vein.

\**ellisi*, Evans. (37-42). Ellis' Bushblue. Manipur—Shan States. R. (= *dascia*, Swin.).

71 (65b). Unf discal band continued full width to v3 only, a small spot against the outer edge in 2; band irregular, semi-broken at v5, inner spots in cell small, not extending to mv. Below dark purple brown, washed purple, outer half F and margin H pale brown. H apex very dark and usually a prominent quadrate white patch mid costa; discal band attenuate towards dorsum; with tornal green scales. Very short tail at v3 and usual tail at v2. Lobed.

α. ♂ above shining violet blue, border 2 mm to 5 at apex, 2 on H. Wings very rounded. Unf discal band unbroken.

*abseus mackwoodi*, Ril. (32-35). The Aberrant Bushblue. Ceylon. R.

β. ♂ above dull purple, border 4 mm to 7 at apex, 5 on H. ♀ pale blue, border 3-6 mm and a spot end cell.

\**abseus indicus*, Riley. Coorg. Sikkim—Tavoy. NR.

γ. ♂ above brilliant deep purple blue, border 2 mm to 4 at apex, 2 on H. ♀ pale metallic violet blue, border as ♂.

*abseus abseus*, Hew. Tavoy—S. Burma. R. (= *amphaea*, Fd.).

72a (1a). Unf cell spots abnormal.

72b (80). Unf very dark brown, cell usually containing a pale spot near end and sometimes a second spot nearer base, no dark spots: discal band continuous, bent at v4, flanked by a pale area on either side, no costal spots; pale areas vary from purple brown to violet or whitish. Unh with a dark basal area or basal spots absorbed into a dark sub-basal band.



**H49. Amblypodia.—The Oakblues. (Plate 28)—contd.**

## Apidanus Group.

72c (75a). Unh discal spots in 7 and 6 form a dark bar coalesced to the dark spot end cell, all inner edges in line. H lobe prominent and with tornal green scales.

72d (74). H with a well defined tail at v2. Below markings large, well defined on a violet brown ground. Apex F and tornus H produced.

72 (73). Unh a large basally bifid black spot mid costa not reaching the black area, which extends from base to mid cell and from costa to dorsum. ♂ above deep rich purple blue, no border. ♀ bright purple, borders broad and continued along dorsum F.

\**diardi*, Hew. (40-54). The Bifid Plushblue. Sikkim—Dawnas. NR. (= *capeta*, Hew.).

73 (72). Unh spot mid costa continued as a broad band across cell to base dorsum, above it there is a pale area from the base along the costa. ♂ ♀ above as last.

*fulgida*, Hew. (36-46). The Shining Plushblue. Sikkim—Shan States. NR. (= *singapura* Dist.).

74 (72d). Tailless. Wing produced in ♂ rounded in ♀. ♂ above most brilliant dark purple blue, no border. ♀ pale blue shading to purple, borders broad. Unf lower outer area pale brown, discal band abbreviated. Unh almost entirely dark brown with a whitish violet fascia from mid termen to mid dorsum, a small apical patch and another mid costa, which sometimes extends to the dorsum; markings as last, but nearly invisible, basal third all black.

\**anniella artega*, Doh. (34-44). The Brilliant Plushblue. Shan States—S. Burma. R.

75a (72c). Unh discal spots in 7 and 6 much more macular and irregular, inner edge of spot in 6 in line with outer edge of spot end cell. Wings rounded.

75b (78a). Tailed and lobed.

75 (76a). Unh basal area very broadly dark brown, unmarked; central area broadly pale brown, followed by a dark oblique submarginal area and about tornus pale again; metallic green scales at tornus well developed.

a. ♂ above purple blue, border F 1 mm to 2 at apex,  $1\frac{1}{2}$  on H. ♀ pale blue, borders broad.

\**apidanus ahamus*, Doh. (34-40). The Plain Plushblue. Cachar—Karens. R.

β. ♂ above darker, border less than 1 mm. ♀ as last.

*apidanus kartophilus*, Fr. Dawnas—S. Burma. R.

76a (75). Unh basal area variegated; extreme base at costa pale, discal markings shining purple brown on a dark area, central and tornal areas pale.

76 (77). Unh no metallic tornal green scales, lobe small; subbasal dark band extends to mid cell. ♂ above bright purple blue, border 2 mm to 3 at apex, 3 on H. ♀ rather pale purple, borders broader.

*adriana*, DeN. (38-44). The Variegated Plushblue. Sikkim—Shan States. NR.

77 (76). Unh with tornal green scales, lobe prominent; subbasal dark band to dorsum. Above as last.

**H49. Amblypodia.—The Oakblues. (Plate 28)—contd.**

*asoka*, DeN. (40-44). The Spangled Plushblue. Sikkim—Shan States. NR. (= *chola*, M.).

78a (75b). No lobe or tail. F slightly concave below the sharply pointed apex, ♂ above shining deep rich ultramarine blue. ♀ purple with very broad borders.

78 (79). Unh broad basal dark area crossed near base by a pale band from base to costa, pale area beyond the dark basal area narrow, tornal green scales prominent. Unf obscure short reddish streak along costa from base. ♂ above border a thread, 1 mm at apex; H toothed at each vein especially at v2, margin F rather crenulate.

\* *chinensis*, Fd. (43-46). The Chinese Plushblue. Sikkim—Assam. NR. (= *lazula*, M.: *moelleri*, DeN.).

79 (78). Unh no pale band on the dark basal area; pale discal area much broader.

α. Unh no tornal green scales, all markings obscure. Unf pale cell spots prominent. Margins not so crenulate as last. ♂ above border from 1 mm to 2 at apex. Blue colour deeper than in last.

*areste areste*, Hew. (40-46). The Tailless Plushblue. Sikkim—Assam. R. (= *patuna*, M.).

β. Unh with tornal green scales; all markings more prominent. Margins more crenulate. Unf pale cell spots obscure. ♂ border narrower.

*areste arestina*, Evans. (41-46). N and S Shan States. R.

80 (72b). Below pale ochreous brown devoid of markings except for a narrow obscure dark brown postdiscal and marginal fascia and some very obscure basal spots H. ♂ above bright shining violet blue, becoming purple outwardly. ♀ paler and bluer. Apex F pointed; H rounded, no tail or lobe or tornal green scales unh.

Fulla Group.

α. ♂ above border under 1 mm. ♀ border 2-6 F and 1 on H.

\* *fulla ignara*, Riley. (36-38). The Spotless Oakblue. Sikkim—Burma. R.

β. ♂ above border 1-2½ mm at apex; ♀ paler than last.

*fulla andamanica*, WM. & DeN. (38-39). Andamans. NR. (= *subfasciata*, M.).

**H50. Surendra.—The Acacia Blues. (Plate 29).**

1a (4). Above purple with broad dark borders. Below dark brown with very narrow black markings, some of which may be outwardly silver edged; unf a spot mid and end cell, 2 costal spots, a highly irregular discal line and sub-marginal spots. Unh basal and discal irregular line and sub-marginal dots; lobe black and a black spot in 2 with obscure green metallic scales; ground colour darkened mid termen F and about discal line H.

1b (3). ♂ tailed at v2; ♀ at vs 2 and 3.

1. (2). H highly excavated between vs 1 and 2, anal lobe large. ♂ upf dark purple blue; ♀ brown, paler brown on disc.

α. Small. ♀ pale discal area usually sharp defined. ♂ blue on H.

**H50. Surendra.—The Acacia Blues. (Plate 29)—contd.**

*quercetorum discalis*, M. (30-34). The Common Acacia Blue. Ceylon. C.

β. Small. ♀ pale discal area F diffuse. ♂ blue colour more restricted and absent on H.

*quercetorum biplagiata*, But. S. India. C.

γ. Larger, ♀ as last. ♂ with blue on H

\**quercetorum quercetorum*, M. (30-40). Dun—Burma. C.

δ. H less excavated between vs 1 and 2.

*quercetorum latimargo*, M. Andamans. NR.

2 (1). H straight between vs 1 and 2, lobe small. ♂ above dark purple blue, borders half as wide as in last. ♀ dull lilac blue, shading basally to dull metallic blue; variable, may be all dull metallic blue. Tails very short and narrow.

*amisena*, Hew. (32-40). The Burmese Acacia Blue. Tavoy—S. Burma. R.

3 (1b). ♂ ♀ Tailless, only a tooth at v2. ♂ above dark purple blue, borders as last. ♀ dark brown, bases broadly paler.

*florimel*, Doh. (36). The Tailless Acacia Blue. Tavoy—S. Burma. R. (*stimula*, DeN.).

4 (1a). Below pale ochreous brown, glossed vinous, no cell or costal spot unf. Unf a waved silvery discal line; unh an irregular silver line near base, another through end cell and a third post discal; tornal markings small. Single tail at v2.

a. ♂ above deep shining purple, border 2 mm to 5 at apex. ♀ pale purple blue, more restricted than in ♂.

*todara todara*, M. (34-38). The Silver Streaked Acacia Blue. S. India. R.

β. ♂ as last. ♀ rather pale purple, not purple blue.

\* *todara distorta*, DeN. Sikkim—Shan States. R.

γ. ♀ pale metallic blue, border 1 mm to 4 at apex, a black spot end cell. Below darker and markings rather differently arranged, being a cross between No. 4 and No. 1; unf discal line obliquely bent in from v3 to costa; unh central line as in No. 1 and post-discal line obscure as in No. 1.

*todara karenia*, Evans. (32). Karens—Dawnas. VR.

**H51. Mota.—The Saffron. (Plate 29).**

♂ above dark purple with a broad dark apex and narrow border; ♀ purple blue paler, border F broad and all H dark brown. Below saffron; unf a dark bar end cell, a postdiscal and sub-marginal line, area between clouded; unh almost entirely covered with large dark brown irregular markings, white edged and coalesced, lobe ochreous and termen irrorated white scales.

\* *massyla*, Hew. (42-35). The Saffron. Bhutan—Burma. R.

**H52. Semanga.—The Rededge. (Plate 29).**

Above shining violet blue, border F 2 mm to 4 at apex; H costa broadly dark, tornus orange from dorsum to 3, crowned black. Below pale ochreous brown; F a discal and submarginal ferruginous

**H52. Semanga.—The Rededge. (Plate 29)—contd.**

line; H basal area unmarked, outer half ferruginous red, inwardly with series of oblique metallic blue streaks, centrally with large obscure black spots, most prominent in 2 and 6, irrorated white scales along termen, especially near tornus.

\* *superba*, Druce. (32). The Rededge. Mergui. VR.

**H53. Loxura.—The Yamfly. (Plate 29).**

Above orange, broad black apex and termen F, narrow border H, bases more or less suffused dark brown. Below ochreous with more or less obscure pale brown basal spots, discal and sub-marginal bands.

a. Upf inner edge of black apex evenly arched; bases slightly darker, suffused.

*atymnus arcuata*, M. (36-40). The Yamfly. Ceylon. NR.

β. From as next to a dark orange with broader black apex, extending to base along costa, inner edge evenly arched, bases broadly suffused, vs 6 and 7 H prominently black. Apex F more rounded.

*atymnus atymnus*, Cr. S. India. NR. (= *surya*, M, WSF).

γ. Dark apex narrower, inner edge obtusely angled, DSF not basally suffused, vs 6 and 7 H not black. Paler than last.

\* *atymnus continentalis*, Fruh. Central India—Mussoorie—Burma. C. (= *mahara*, Fr, DSF: *xystus*, Fruh, var with dark uph.).

δ. Larger, brighter orange, apex broader, evenly arched and penetrated by yellow veins, base prominently suffused dark brown and on H practically the whole wing suffused.

*atymnus prabha*, M. (40-42). Andamans. C.

η. Small, rather pale, with short dark tails.

*atymnus nicobarica*, nov. (35-38). All Nicobars. NR.

**H54. Yasoda.—The Branded Yamfly. (Plate 29).**

Above orange with a black apex and border F; upf with a black bar end cell and 3 discal spots; uph a bar end cell and an oblique discal band; the black markings may be reduced or absent. Below ochreous to ochreous brown with more or less obscure black rings, arranged irregularly towards base and as a discal band, which turns white towards dorsum H; tornal markings obsolete.

\* *tripunctata*, Hew. (42-40). The Branded Yamfly. Sikkim—Burma. R.

**H55. Drina.—The Yams. (Plate 29).**

1 (2). ♂ ♀ above dark brown, outwardly darker; H discal row white spots followed by a sub-marginal row, larger in ♀. Below silky white, narrow discal and submarginal brown bands, tornal markings H obscure.

**H55. Drina.—The Yams. (Plate 29)—contd.**

\* *domina*, Hew. (45-48). The Brown Yam. Lushai Hills—Burma. NR. (= *usira*, Fd.).

2 (1). ♂ upf except for base and broad termen, shining purple blue and the veins on the blue area pale yellow; ♀ all dark brown; uph dark brown with 2 large tornal white spots and a broad white sub-tornal band. Below white, apex and margin F broad dark chocolate brown, the inner third of the dark area being darker; unh upper half of termen dark brown and a broad sub-tornal dark band.

*mancia*, Hew. (42-46). The Blue Yam. Mergui. R.

**H56. Apharitis.—The Silverlines.**

Below with silver centred broad dark bars and spots on a pale ground.

1a (3). Unf upper discal markings form a Y, consisting of a bar mid 4-5 placed centrally below 2 costal spots. Above mostly tawny, no blue; tornus uph and unh not orange.

1 (2). Unh lower end of upper discal band turned inwards to meet central band at v4.

*epargyros epargyros*, Evers. (30-34). The Yellow Silverline. Baluchistan. C.

2 (1). Unh lower end of upper discal band turned outwards to meet submarginal band at v4, which latter is very much further from the small marginal spots.

a. Unh lowest of the 3 sub-basal spots rounded or elongate. Above bright tawny, base only suffused brown scales, black bands prominent in ♂, may be obsolete in ♀; on F marginal and sub-marginal black bands well separated.

*acamas hypargyros*, But. (30-36). The Tawny Silverline. Cutch. Sind, Baluchistan. Punjab. NR.

β. Below as last. Above much darker, suffused brown scales; in ♂ leaving only some tawny colour round the black spots F and very little on H: ♀ more tawny: marginal and submarginal lines widened and often confluent, forming a single very broad dusky band.

*acamas chitralensis*, Riley. (34-38). Chitral. NR.

3 (1a). Unf upper discal markings consist of an inner short and an outer long bar, each made up of 2 conjoined spots; these bars may be parallel or may form a V. ♂ above iridescent pale blue, ♀ dull blue; no orange patches upf or plumbeous scales. Below pale brownish ochreous, bands concolorous with ground and faintly outlined black, silver centres prominent. Very variable.

*lilacinus*, M. (32-36). The Lilac Silverline. Bangalore, Kasauli, Assam, Mhow, Malda, Hardwar. R. (= *æstivus*, Swin.).

**H57. Spindasis.—The Silverlines. (Plate 29).**

Below as *Apharitis*. Above dark brown, males usually blue or blue shot. Unf upper discal markings as *lilacinus*.

H57. *Spindasis*.—The Silverlines. (Plate 29)—*contd.*

1a (13). Unh sub-basal band ends on v1b and is never continued along it.

1b (9a). Unf with a basal streak along the costa from the central cell bar; this streak in the DSF may only be indicated by a few silver scales and be hard to see. The basal markings in the cell unf consist of a streak from the base under the scv and a spot beyond, the two being conjoined or separate; in the DSF the streak may be absent.

1c (4a). Unh sub-basal band entirely confluent from the costa to v1. Unf sub-marginal line normally continuous. Below yellow with conspicuous red bands, more or less black edged.

1 (2a). ♂ above not or only very faintly blue shot, ♀ without conspicuous plumbeous scales.

a. Upf orange areas restricted. Unh central band more separated from the postdiscal band, rendering discal yellow area wider.

*vulcanus fusca*, M. (26-34). The Common Silverline. Ceylon. C. (= *minima*, But., an ab).

β. Upf orange areas wider. Unh bands more evenly spaced.

\* *vulcanus vulcanus*, F. India. C. (= *etolus*, Cr.: *bracteatus*, But.: *tigrinus*, M.).

γ. ♂ upf orange markings reduced to a few streaks; ♀ plain dark brown. Below bands very wide.

*vulcanus tavoyana*, Evans. Tavoy. R.

2a (1). ♂ uph blue shot; ♀ with plumbeous scales on H and dorsal area F.

2 (3). ♂ above pale blue shot only on H. Upf orange areas pale, restricted and suffused dark scales. ♀ dark, with orange area upf. Unf red sub-marginal band.

*schistacea*, M. (28-37). The Plumbeous Silverline. Ceylon. S. India. NR.

3 (2). ♂ above lower half F and all H pale blue shot. ♀ lilac-grey, no orange area upf, but dark bands show conspicuously. Unf no red sub-marginal band.

*gabriel*, Swin. (30). The Grey Silverline. N. Burma. R.

4a (1c). Unh sub-basal band broken into 3 spots, the upper two of which may be conjoined. Unf sub-marginal line absent or composed of short dis-jointed dashes.

4b (8). Unf arrangement of upper discal spots normal, outer spots in 4 and 6, inner spots in 5 and 7, each pair one above the other and conjoined; the inner edge of the spot in 6 may touch the outer edge of the spot in 5 thereby forming a rough V, sub-marginal line never continuous.

4 (5a). ♂ above dusky violet brown at apex F, rest dull greenish grey, shot light blue. ♀ except for dark apex shining plumbeous silvery. Below dull reddish brown, markings very narrow. ? Aberration.

*abnormis*, M. (40-44). The Abnormal Silverline. S. India. VR.

5a (4). ♂ above blue shot, ♀ dark brown, the blue colour more or less replaced by plumbeous scales.

5 (6a). Below brick red with well defined markings ♂ above intense black, shot dark blue up to v3. ♀ upf with a small diffuse



H57. *Spindasis*.—The Silverlines. (Plate 29)—*contd.*

orange spot, the blue shot replaced by a slight dusting of blue scales.

*nubilus*, M. (27-32). The Clouded Silverline. Ceylon. R.

6a (5). Below not brick red. There appear to be 3 seasonal forms: I WSF below pale yellow with black-edged dark yellow bands: II Autumn form, khaki or cinnamon with similar coloured black edged bands: III Spring form, similar to last but black edgings absent and bands only indicated by the silver lines. *uniformis* seems to lack form II.

6 (7). ♀ with plumbeous scales above. ♂ ♀ with a well defined triangular orange patch upf. ♂ upf blue shot area not above v2.

a. ♂ upf dark brown with a more or less well defined orange patch upf, large and extending into 2 in the WSF, small and obscure in the DSF; WSF only shot blue in 1b, in DSF carried up into 2 and 3. Below pale yellow in WSF with well-defined markings, DSF khaki to reddish brown with markings tending to become obsolete.

*ictis ceylanica*, Fd. (27-32). The Common Silverline. Ceylon. C. (= *greeni*, Heron).

β. Larger. Upf orange patch well defined and almost invariably present. WSF below with very well defined dark bands: DSF khaki with bands nearly obsolete.

*ictis, ictis*, Hew. (30-35). India. C.

7 (6). ♀ above no plumbeous scales. ♂ upf at most a small obscure orange patch; in ♀ the patch is oval or circular, not triangular and does not extend below v3. Below khaki to reddish brown, markings well defined in WSF, faint in DSF. ♂ upf shot blue area above v2.

a. Comparatively small.

*elima fairliei*, Ormiston. (28-35). The Scarce Shot Silverline. Ceylon. NR.

β. Rather larger. Very variable.

*elima elima*, M. (32-38). India. R. (= *khurdanus*, *lunulifera*, *trifurcata*, M.).

γ. Much larger, wings elongate: upper part termen F convex.

*elima uniformis*, M. (36-42). Chitral—Kashmir. NR.

8 (4b). Unf sub-apical markings abnormal; 3 outer spots in 4, 5 and 6, that in 5 slightly shifted in; single inner spot in 7 midway between the outer spots and the discal band. ♂ above dark brown with a prominent orange patch upf, most of F blue shot, which colour extends over the orange area, presenting a peculiar appearance. ♀ dark brown, no plumbeous scales. Below khaki with narrow markings rather as in the DSF of *ictis*.

*maximus*, El. (35-42). The Karen Silverline. Shan States—Dawnas. NR.

9a (1b). Unf no costal markings above the scv, between the central cell bar and the base.

9b (12). Unf basal markings in cell as for 1b.

9 (10a). Unf sub-marginal line obscure, absent or discontinuous. Below bands very narrowly black-edged. Above dark brown, ♂ blue shot F and H; ♀ with the blue shot replaced by plumbeous scales,

H57. *Spindasis*.—The Silverlines. (Plate 29)—*contd.*

*a.* Below pale ochreous, bands concolorous or slightly darker than the ground, silver line often absent. ♂ ♀ with a more or less well developed orange patch upf, often absent.

*nipalicus nipalicus*, M. (36-42). The Silvergrey Silverline. Kulu—Nepal. R. (= *zaffra*, DeN.).

*β.* Below pale cinnamon red, bands darker, silver line obsolete, ♂ ♀ usually with a prominent orange patch.

*nipalicus sani*, DeN. Sikkim R. (= *rukma*, DeN.).

*γ.* Below as last, rather darker. ♂ upf darker, no orange patch. Below pale to dark cinnamon red, silver lines may be prominent; lobe maroon or black; discal band F and H more broken. ♀ above no orange, H and discal area F pale silver grey, scales closely set, not sparse as in other races.

*nipalicus evansii*, Tytler. Nagas, Shan States—Karens. R.

10a (9). Unf sub-marginal line continuous and sharply defined.

10 (11). Below khaki with narrow dark bands. Above dark brown, ♂ shot blue and with no orange patch upf.

*rukmini*, DeN. (33-38). The Khaki Silverline. Sikkim—Assam. VR.

11 (10). Below pale yellow, with broader black bands. ♂ shot blue, often with small orange spot upf; ♀ brown, with broad orange area.

*elwesi*, Riley. Elwes' Silverline. Kumaon to Assam. VR.

12 (9b). Unf base cell with a continuous club-shaped streak. Above dark brown, no orange on F; ♂ shot blue F and H. Below pale yellow with black bands to cinnamon red with red bands.

\**syama peguanus*, M. (26-40). The Club Silverline. Orissa. Sikkim—Burma. C. (= *orissanus*, M.).

13 (1a). Unh sub-basal band continued along vlb to or nearly to the lower end of the central band, sometimes macular. Unf basal marking consists of a broad bar across the cell, the upper edge of which is joined to the base by a streak over the scv and on either side of it, which streak does not reach the central cell spot; sub-marginal line usually continuous, but may be merged to the sub-marginal line; sub-apical spots V shaped. Above as last.

*a.* Below bands very broad, ground colour pale yellow to reddish ochreous, bands usually red, very rarely black or nearly so, unh the sub-basal band in the DSF may not be continued along vlb.

*lohita lazularia*, M. (36-42). The Long-banded Silverline. Ceylon. S. India. R. (= *concanus*, M.: *zebrinus*, M, var with black bands).

*β.* Below pale yellow, bands black to red, very variable. Unf sub-marginal line wide and joined to the marginal line in the WSF., thin and macular in the DSF.

*lohita himalayanus*, M. (30-42). Sikkim—N. Burma. C.

*γ.* As last, but smaller. Unf sub-marginal line always narrow and continuous.

*lohita seliga*, Fr. (28-34). Karens—S. Burma. C.

*δ.* Below bands always black, sub-marginal line narrow and continuous. Unh sub-basal band always meets the central band.

*lohita soilus*, M. (30-36). Andamans. R.

**H58. Zesius.—The Redspot. (Plate 29).**

♂ above copper red outwardly darker and inwardly glossed violet with a fuscous border, 1 mm; ♀ rather pale powdery blue, may be purple tinged, with broad borders of variable width; uph with 2 tornal black spots, orange crowned in ♀. Below pale grey with white edged brown markings, turning reddish towards base, arranged as in *Amblypodia*; discal bands fairly regular; tornal spots black, crowned orange or entirely orange.

\**chrysomallus*, Hub. (38-44). The Redspot. Ceylon. S. India. Orissa. NR.

**H59. Pratapa.—The Tufted Royal. (Plate 29).**

1a (3a). Below a prominent white discal band.

Vidura Group.

♂ above pale shining azure blue, border F  $\frac{1}{2}$  mm-5 at apex; uph with a white patch mid costa; ♀ paler, with a prominent white patch end cell F. Below rather pale brown, crossed by an even white band, central on F discal on H and followed by a thin sub-marginal black line; tornal lobe black and an orange crowned black spot in 2 with white scales between.

1 (2). ♂ upf brand mid v1 overlaid by a tuft of white hairs: unf a tuft of white hairs mid dorsum: uph a brand above base 6 covered with blue scales on a polished area.

a. F v9 absent. Unh white band very narrow, just under 1 mm. Considerable seasonal variation.

\**vidura penicilligera*, DeN. (38-42). The Double Tufted Royal. Assam—Dawnas. NR.

β. F v9 present, but may be absent in ♀. Unh white band just over 1 mm.

*vidura burmana*, M. (35-38). Dawnas—S. Burma. NR.

2 (1). ♂ upf no brand: unf tuft black: uph brand dark brown, oval on a polished area. Below white band broader and expanding towards the dorsum and costa. Considerable seasonal variation in width of borders above.

*cotys*, Hew. (33-37). The White-banded Royal. Sikkim—N. Burma. NR. (= *cotoides*, Tyt.).

3a (1a). Below no white band. ♂ upf no brand or tuft: uph with brand. ♀ uph veins darkened.

3b (9). ♂ unf with tuft.

3c (8). ♂ unf tuft single, of long hairs.

3d (5a). Palpi aberrant: third joint, long, straight, in line with second joint. F vs. 5 and 6 approximate at origin.

Ctesia Group.

3 (4). Below polished silver grey with a discal series of separate black spots, broad bars end cells and a prominent spot mid 7 H. ♂ upf bright shining blue; upf a large black spot at bases 2 and 3 and another mid 1b. ♀ pale purple blue turning whitish towards apex F. ♂ unf tuft brown; dark brand uph on a black polished area.

\**ctesia*, Hew. (38-40). The Bi-spot Royal. Kumaon—Dawnas. NR.

H59. Pratapa.—The Tufted Royal. (Plate 29)—*contd.*

4 (3). Below a narrow dark discal line, no spots. Unf discal line not below v2; unh upper bar of discal line in 7 shifted in. Below ♂ polished silver; ♀ white with an ochreous tinge; no bars end cells. ♂ above shining blue; ♀ pale blue. ♂ unf tuft black; uph brand large and dark.

a. ♂ above paler and greenish. Below discal line faint and macular.

*blanka sudica*, Evans. (37-42). The Silver Royal. S. India. R.

β. ♂ upf with blue streaks on the black apex. Uph blue extends into 6. Below discal line continuous.

*blanka argentea*, Aurivill. (30-40). Sikkim—Dawnas. R. (= *lucida*, Druce: *minturna*, Fr.).

5a (3d). Palpi normal: third joint short, bent down at an angle to the second joint. F vs. 5, 6 normal, separate at origin. Below a narrow discal line, no spots: unf discal line continued to v1 except in faintly marked specimens.

Deva Group.

5 (6a). Below white, discal line macular, bars end cells faint; unh upper bar of discal line in 7 shifted out. ♂ above shining blue, ♀ pale blue or purple blue, turning whitish outwardly on F. ♂ unf tuft black; uph dark brand very large and conspicuous on a dark area.

a. ♂ above darker, border F straight to dorsum or nearly so. Below discal line often faint.

*deva deva*, M. (32-40). The White Royal. Ceylon. S. India—Central Provinces. R.

β. ♂ paler. WSF ♂ upf border prominently angled mid lb and continued along dorsum.

\**deva lila*, M. Mussoorie—Dawnas. NR. Andamans. R. (= *angada*, Fr.).

6a (5). Unf discal line continuous, not macular.

6 (7). Below pale grey with a white bar end cell, prominent on F. ♂ above shining deep blue. ♀ pale violet blue, white beyond end cell F. Lobe dark orange. ♂ unf tuft dark brown; brand uph small and inconspicuous.

a. ♂ above blue restricted on F, just enters cell and not into 2, border angled mid lb and continued to mid dorsum. ♀ uph all dark brown, powdered with violet blue scales.

*icetas icetas*, Hew. (30-37). The Dark Blue Royal. Kangra—Kumaon. R.

β. ♂ upf blue crosses cell and enters base 2; border angled mid lb and continued  $\frac{1}{4}$  along dorsum. ♀ uph violet blue.

*icetas extensa*, Evans. Sikkim—Dawnas. R.

γ. ♂ above blue paler and with a greenish tinge, much more extensive, entirely fills cell and extends to base 3; border not angled mid lb or continued along dorsum.

*icetas mishmia*, Evans. Mishmi Hills. VR.

7 (6). Below no bars end cells. Below pale brown discal line on F inwardly curved at upper end, outwardly white edged. ♂ upf blue to base 4. ♀ above pale dull powdery blue, border broad and angled mid lb on F, broad on H. ♂ unf tuft pale yellow; uph brand large, but inconspicuous.

**H59. Pratapa.—The Tufted Royal. (Plate 29)—contd.**

*a.* ♂ above shining purple blue; H border 1 mm.

*\*icetoides carmentalis*, DeN. (30-32). The Blue Royal. Assam. NR.

*β.* ♂ above shining blue; H border a thread. Unh ternal orange area large, portions in 1a and 2 united.

*icetoides icetoides*, El. Karens—S. Burma. R.

8 (3c). ♂ unf 2 tufts, inner long and black, outer short and white. Wings produced; inner tail broad and ciliate. Below creamy brown, unf discal line straight at costa, lower part curved, nearer end cell than termen. ♂ above pale shining blue, apex F very broadly black, but border reduced to a thread at tornus, no border H. ♀ pale purple blue.

Cleobis Group.

*cleobis*, God. (27-38). The Broadtail Royal. S. India. Dun—Dawnas. NR.

9 (3b). ♂ unf no tuft. ♂ above dull slaty blue, broad dark apices and border F, border H 2 mm and veins dark. ♀ slightly paler and border narrower. Lobe prominently ochreous and cilia white. Below greyish white with narrow bars ends cells and a macular discal line; ternal markings H reduced. ♂ uph brand large and black.

Bhotea Group.

*bhotea*, M. (26-27). The Slate Royal. Sikkim—Assam. R.

**H60. Tajuria.—The Royals. (Plate 29).**

Very like *Pratapa* and the ♀♀ are hard to distinguish, but in *Pratapa* the veins on the hindwing are dusky, which is not the case in *Tajuria*.

1a (10a). Unh irrorated white scales in 1c extend sideways into 1b and 2 and sometimes into 3. F v9 short, from beyond mid v7 and from just before or after end v10.

1b (5a). Below ochreous or ferruginous.

Jangala Group.

1c (3a). Palpi third joint abnormally long and thin.

1 (2). Unh ternal spots crowned by a metallic green line. ♂ above dark purple blue, very restricted. ♀ paler, blue colour enters 3 on F. Below ♂ dark chocolate, ♀ yellow to pale ferruginous.

*a.* ♂ upf blue in lower half of cell, basal  $\frac{2}{3}$  of 1a and 1b.

*jangala ravata*, M. (32-42). The Chocolate Royal. Sikkim—Burma. C. (= *phædra*, Fruh, WSF.).

*β.* Below dark rufous brown, discal line prominent: ternal markings more metallic, less white.

*jangala travana*, Hew. Mergui—Malaya. NR.

*γ.* ♂ upf blue powdery, confined to basal  $\frac{1}{2}$  of 1a and 1b.

*jangala andamanica*, WM. Andamans. R.

2 (1). Unh no metallic green line over ternal spots. Below yellow, no discal line; unh ternal irrorated area surmounted by a white irregular line. ♂ above rich shining dark blue in 1a and 1b F and just entering cell; H blue with broad dark border.

H60. *Tajuria*.—The Royals. (Plate 29)—*contd.*

*donatana*, DeN. (32). The Dawna Royal. Dawnas. VR.

3a (1c). Palpi normal, third joint short. Below discal line prominent and white edged.

3 (4). Unh a white irregular line over the tornal irrorated area. Below yellow, discal line unf about midway between the termen and end cell. Upf ♂ black: ♀ lower discal area pale blue.

a. ♂ uph costa only pale blue extending to v5. ♀ blue just enters base 2; uph with only sparse blue scales about base to middle.

*megistia megistia*, Hew. (32-34). The Orange and Black Royal. Assam. NR.

β. ♂ uph all pale shining blue, except for narrow black termen. ♀ blue more extensive on F and H all blue except apex.

*megistia thria*, DeN. Dawnas—S. Burma. R.

4 (3). Unh no white line over the tornal irrorated area. Below chestnut, discal line unf much nearer end cell than termen.

a. ♂ upf black; uph costa only pale blue, extending to v5 and into cell. Unf discal line sinuous.

*yajna yajna*, Doh. (34). The Chestnut and Black Royal. Mussoorie-Kumaon. VR.

β. As last, but uph blue costal area extends to v4 and into cell. Unf discal line straight. ♀ upf lower discal area and uph pale powdery blue.

\* *yajna istroidea*, DeN. (32-34). Sikkim—Assam. R. (= *teza*, Swin.).

γ. ♂ upf shining pale blue in 1a and 1b, not reaching v1; uph all blue except for narrow terminal border. Below paler. Lobe above mostly fulvous.

*yajna ellisi*, Evans. (34). N. Shan States. R.

5a (1b). Below pale brown to brown, sometimes rosy in No. 8. ♂ ♀ above pale blue except for costa and apex and termen F. ♂ upf denser black beyond end cell (except 7b).

Mantra Group.

5b (7a). Below with bars end cells F and H; brown discal line midway between termen and end cell and area beyond paler; unh upper end of discal line usually shifted out.

5 (6). ♂ shining green on F in basal  $\frac{1}{2}$  of 2 and  $\frac{1}{3}$  of 3: ♀ blue in  $\frac{2}{3}$  of 2 and  $\frac{1}{3}$  of 3; uph lower  $\frac{1}{2}$  of 6 blue to termen and in ♀ basal  $\frac{2}{3}$  of 6 blue. Unh orange tornal spots prominent.

*mantra*, Fd. (42-44). Felder's Royal. Tavoy—S. Burma. VR.

6 (5). ♂ pale non-shining blue, on F only to base 2; ♀ in  $\frac{1}{2}$  of 2 and  $\frac{1}{3}$  of 3. ♂ ♀ uph blue only in base of 6. Unh orange tornal spots very reduced.

*ceta*, DeN. (47-48). DeNicéville's Royal. Karens—S. Burma. VR.

7a (5b). Below bar end cell absent on H and at most faint on F; unf discal line nearer termen than end cell; ground colour uniform.

7b (9). Below brown, discal line not prominently white edged. ♂ upf a prominent fuscous area of modified scales, disappearing with petrol, at and beyond end cell. ♂ upf blue in  $\frac{2}{3}$  cell, 1a and 1b; in ♀ extending into 2 and 3.



H60. *Tajuria*.—The Royals. (Plate 29)—*contd.*

7 (8). Unh discal line not conspicuously broken at v4. ♂ above pale shining greenish blue; uph costa broadly dark brown, filling all 6 except extreme base.

*ogyges*, DeN. (47-48). The Large Branded Royal. Moulmein—S. Burma. R.

8 (7). Unh discal line conspicuously broken at v4; below often rosy, especially in ♀. ♀ above pale blue.

*melastigma*, DeN. (40-46). The Branded Royal, N. Kanara, Kumaon—Burma. R.

9 (7b). Below very pale brown, discal line prominently white edged; tornal orange markings H large. ♂ ♀ above pale blue, rather powdery, extending on F in ♂ into basal  $\frac{1}{2}$  or  $\frac{1}{3}$  of 2, in ♀ up to base 3 and most of 2; uph lobe orange crowned.

*ister*, Hew. (32-39). The Uncertain Royal. Assam. Bhamo. VR.

10a (1a). Unh tornal white irroration confined to 1c. Below white to pale brown, discal line not white edged.

10b (13a). F v9 absent or very short and from after end v10.

Isæus Group.

10c (12). F v9 absent. Body blue above. Below pale brown, discal line narrow orange, no bars end cells, marginal markings obscure: tornal markings H prominent and a broad orange area.

10 (11). Unf discal line midway between end cell and termen: unh orange at tornus in 1c and 2 not coalesced. ♂ above rather pale shining blue, black apex F extends into end cell and all space 3, border at tornus 1 mm and a thread on H. ♀ pale dull slaty blue, border narrow: H costa and apex broadly dark brown. No ♂ brand.

*buto*, DeN. (32). The Baby Royal. Assam—Burma. NR. (= *valentia*, Swin.).

11 (10). Unf discal line much nearer end cell than margin: unh tornal orange in 1c and 2 often coalesced. ♂ above shining cerulean blue: upf a large prominent patch of modified scales before end cell and at bases 2 and 3, which disappear with petrol: beyond a black apical patch. ♀ much as *buto*.

*cleoboides*, El. (25-28). The Azure Royal. Karens—S. Burma. NR.

12 (10c). F v9 present. Below discal lines brown, rather nearer end cell than termen. No ♂ brand. Above shining pale blue with a broad black apex F, inner edge of which is evenly curved.

*isæus tyro*, DeN. (28-35). The Bornean Royal. S. Burma. VR.

13a (10b). F v9 long, from about mid v7 and from well before end v10.

13b (20a). Unh no spot on dorsum between end discal line and base. Below with a narrow discal line which may be absent.

13 (14a). ♂ upf a black brand in outer half of cell, not disappearing with petrol. ♂ above pale shining greenish blue, apex F broadly black, reducing to 2 mm at tornus, bases 2 and 3 blue: H apex dark brown. ♀ paler and blue more extensive. Below very pale brown, no bars end cells; discal line ferruginous

H60. *Tajuria*.—The Royals. (Plate 29)—*contd.*

on F nearer cell than termen: H tornal markings small, orange crowns separate from each other and from the discal band.

*Culta* Group.

*culta*, DeN. (32). The Black-branded Royal. Assam—S. Burma. R.

14a (13). ♂ upf no brand.

*Cippus* Group.

14b (18a). Below discal line about midway between termen and end cell, continuous.

14 (15a). Unh discal line not parallel to termen, very straight and continuous to the middle of 2 from the costa. Below pale brown, discal line ferruginous, submarginal line prominent, no bars end cells. ♂ above pale blue in DSF, reaching base 3; WSF darker, blue, more restricted; ♀ paler, with a white spot beyond end cell F; uph lobe mostly red.

*dicus*, Hew. (33-36). The Straightline Royal. Mussoorie—N. Burma. R. (= *thydia*, Tyt.).

15a (14). Unh discal line parallel to termen, very irregular, brown. Below cell bars usually present. Uph lobe mostly black.

15b (17). Above pale cerulean blue; ♂ upf blue in most of cell and to v3, terminal border narrow in 1a and 1b: ♀ blue very extensive. Below white to grey.

15 (16). ♂ above very pale cerulean blue, entering 3 upf; ♀ area beyond cell upf prominently very pale.

*albiplaga*, DeN. (34-37). The Pallid Royal. Sikkim—Tavoy. R. (= *drucei*, Swin, DSF.).

16 (15). Darker; ♂ upf no blue in 3. Below darker, discal lines prominent, tornal spots reduced. Often no tail at v2.

*sehonga*, Tyt. (35). Tytler's Royal. Manipur. \*R.

17 (15b). Above dusky dark powdery blue; ♂ upf blue colour may just enter 2, terminal border broad; ♀ blue colour just enters base 3. Below pale brown: considerable seasonal variation.

*thya*, DeN. (30-36). The Dusky Royal. Assam R. (= *palescens*, Druce, DSF.).

18a (14b). Below discal line much nearer termen than end cell, macular and may be absent; pale grey to white, bars end cells present or absent, on H discal line broken in at 3 and 4, so that lower part is shifted in compared to the upper part; tornal markings more or less prominent. ♀ uph nearly always with a wavy black discal line.

18 (19). Above cilia conspicuously white. ♂ above slaty blue, on F in lower  $\frac{1}{2}$  of cell, basal  $\frac{1}{2}$  of 1a and 1b, but may extend to base 3; on H there may be a wavy discal line as in ♀. ♀ upf blue more extensive, to beyond end cell where it is paler, sometimes whitish. ♂ ♀ uph 2 tornal black spots in 1c and 2.

*jehana*, M. (30-37). The Plains Blue Royal. Ceylon. S. India—Bengal and Dun. NR. (= *arida*, Riley, DSF.).

♂. *v. ceylonica*, Riley. Blue upf extending above v2. NR.

19 (18). Cilia brown, or long hairs only white. ♂ above dark shining blue or greenish blue; upf cell blue and may extend to base 3. ♀ greyish blue, becoming whitish outwardly on F.

a. Darker blue. Smaller.

**H60. Tajuria.—The Royals. (Plate 29)—contd.**

\**cippus longinus*, F. (31-45). The Peacock Royal. Ceylon. C. β. Brighter, larger.

*cippus cippus*, F. India, Burma. C. Andamans. R. (= *pseudolonginus*, Db.).

20a (13b). Unh a small black spot on dorsum between the end of the discal band and the base. Below white; H. tornal markings very reduced.

Illurgis Group.

20 (21a). Unh no black spot in 8 internal to the discal band. Below bars end cells wide, discal line broken, very irregular on H; unh black spot at apex. Upf disc white, turning bluish at base and dorsum, broad black border extending along dorsum, bluish white scales at tornus; uph bluish, turning white beyond end cell and base 6, rest of 6 dark brown to costa. ♀ as ♂ but wings more rounded.

\**illurgis*, Hew. (38-42). The White Royal. Mussoorie—N. Burma. R.

21a (20). Unh a black spot just below v8 between end cell and base.

21b (23). Below with a narrow irregular discal line, bars end cells narrow.

21 (22). Unf discal line in 1b not concave. Above as last with white patches F and H.

*illurgioides*, DeN. (38-42). The Scarce White Royal. Mussoorie—Assam. R.

22 (21). Unf discal line concave in 1b. Above ♂ pale blue, extending on upf to termen in 1b and filling basal  $\frac{2}{3}$  of 2. ♀ with broad dark border at termen upf and along costa uph; upf blue colour extending to 3 and turning whitish on disc.

*luculentus neta*, Swin. (38-41). The Chinese Royal. Assam. VR.

23 (21b). Below no discal line, but with several large irregularly placed black spots. Above pale blue turning whitish on disc F and beyond cell H, with broad dark borders F and costa H, extending along costa F. ♀ white with borders as in ♂.

\**maculata*, Hew. (36-44). The Spotted Royal. Sikkim—Burma. NR. (= *albipicta*, Fr. DSF.).

**H61. Charana.—The Mandarin Blue. (Plate 29).**

1 (2a). Below white with a broad dark discal band, no bars end cells. Above ♂ shining violet blue, border 1 mm to 3 at apex F. ♀ dark brown. Tails equal 6 mm.

a. Lobe above mostly black. ♀ uph with a row of sub-marginal white spots. Below discal band dark brown, outwardly defined by a white line, diffused outwardly; H a waved line above tornus quite separate from the tornal markings, black spot in 2.

*jalandra macarita*, Fr. (36-44). The Banded Royal. S. India. R.

β. As last. ♀ uph a white subterminal line in 1c-2. Below discal band chocolate; H tornal green scales more prominent; white diffused areas beyond discal band more extensive.

**H61. Charana.—The Mandarin Blue. (Plate 29)—contd.**

*\*jalindra indra*, M. Orissa. Sikkim—Dawnas. NR.

γ. Lobe above mostly orange. ♀ uph no white spots. Below ground colour bluish white, discal band ferruginous brown, on F only separated from the marginal ferruginous area by a narrow white line to v2; H discal and marginal dark areas coalesced, no wavy discal line above tornus; tornal orange very extensive.

*jalindra tarpina*, Hew. Andamans. R.

2a (1). Below yellow. Tail v 1b 12 mm, at v2=6 mm.

2 (3). ♂ above pale blue, black apex fills  $\frac{1}{2}$  of cell and the dark border extends along the dorsum; H costal border broad. ♀ above dark brown, tornal area H white with black spots. Below discal band ferruginous brown, confluent with paler ferruginous brown marginal area: marked as in last.

*\*mandarinus*, Hew. (40-44). The Mandarin Blue, Sikkim—Burma. NR. Recorded from Andamans.

3 (2). ♂ above rich deep blue, much restricted. ♀ tornal white area uph reduced. Below border purple brown with white sub-marginal line.

*cephais*, DeN. (45). The Cachar Mandarin Blue. Assam. VR.

**H62. Jacoona.—The Great Imperial.**

♂ above pale shining blue at base F and H and a blue bar beyond the cell F on the black apex; ♀ dark brown: uph tornal area white with two large black spots. Below white, apex F broadly and H narrowly silky ochreous; unh tornal spots prominent and irrorated metallic scales, a very broken black discal line from 1c to 4. ♂ upf black brand on disc only showing with petrol.

*anasuja*, Fd. (46-50). The Great Imperial. N. Shan States—S. Burma. VR.

**H63. Manto.—The Green Imperial.**

♂ above bright shining greenish blue with a broad black apex F. ♀ dark brown with a broad white tornal area uph bearing black spots. Below ♂ chrome yellow outwardly darker; ♀ paler; H with prominent tornal spots.

*hypoleuca martina*, Hew. (44-47). The Green Imperial. Karens—S. Burma. R.

**H64. Mantoides.—The Brush Imperial.**

♂ ♀ above dark brown with a broad white tornal area uph, bearing black spots. Below silky; F dorsum broadly white, remainder ochreous, darkening towards apex; H white, costa and apex ochreous; a discal black line, very obscure on F and prominent tornal spots H.

*licinius*, Druce. (36-44). The Brush Imperial. Karens—S. Burma. VR.

**H65. Neocheritra.—The Grand Imperials. (Plate 29).**

1 (2). ♂ upf base shining pale blue, apex dark brown, inwardly angled and there may be a white patch in 2; uph dark brown, tornal area broadly white, crowned by some scattered blue scales and bearing black spots. ♀ dark brown with sometimes a white discal patch F; H tornal area as ♂. Below white, apices ochreous brown, broad on F and bearing two suffused white fasciæ, narrower on H and bearing one white fascia: H with an irregular discal line from 1c to 2 and prominent tornal black spots, sprinkled with metallic blue scales.

*\*fabronia*, Hew. (37-44). The Pale Grand Imperial. Sikkim—Burma. R.

2 (1). ♂ above dark purple blue with broad black apex F and border H, tornus whitish with a black spot in 1c. ♀ dark brown with the tornus H white, bearing two confluent black spots. Below white with unmarked bright ochreous apices and the usual tornal markings H.

*amrita*, Fd. (35-50). The Dark Grand Imperial. Karens—S. Burma. VR.

**H66. Purlisa.—The Giant Imperial.**

♂ above shining blue with broad black apex F and border H. Below dark ashy with a darker postdiscal band and sub-marginal lunules; tornal area sprinkled metallic scales.

*gigantea*, Dist. (52). The Giant Imperial. Ataran—S. Burma. VR.

**H67. Suasa.—The Red Imperial. (Plate 29).**

♂ upf orange with black apex and border, base powdered bright blue scales, veins black; uph pale blue with black apex and costa, black tornal spots in 1a and 2. ♀ upf orange with dark brown apex and border and base broadly darkened; uph dark brown with tornal white area, bearing black spots. Below white; F a broad ochreous brown discal band from costa to v3 continuing to v1 as a narrow brown line, margin broadly ochreous brown; H a prominent black spot in 7 near base in ♂ only, a narrow discal and sub-marginal brown line ending in a prominent black spot in 7, prominent tornal spots.

*\*lisides*, Hew. (27-30). The Red Imperial. Assam—Burma. R.

**H68. Cheritrella.—The Truncate Imperial. (Plate 29).**

♂ upf dark purple blue with broad black apex and border; uph pale shining blue with broad dark brown borders, lobe ochreous. ♀ much paler blue with two discal white spots upf. Below rather pale ochreous brown with darker markings, few and obscure on F, numerous on H; tornal markings H absent except for some white irroration.

*\*truncipennis*, DeN. (32-36). The Truncate Imperial. Sikkim—Karens. R. (= *nagana*, Rüb.)



**H69. Neomyrina.—The White Imperial. (Plate 29).**

♂ ♀ above white with broad black apex F, shot blue in ♂. Below white with broad grey, black edged, markings arranged as in *Amblypodia* and with tornal black spots, crowned with metallic green scales.

\**hiemalis*, *God and Salv.* (50-58). The White Imperial. Daw-nas—S. Burma. NR.

**H70. Chéritra.—The Common Imperial. (Plate 29).**

♂ ♀ above dark brown with a purple tinge in ♂; a white tornal area H, bearing black spots. Below very faint bars at end of cells; a narrow discal line F; a discal and sub-marginal line H and tornal black spots, crowned metallic scales.

α. Below pure white, apex F faintly tinged ochreous; unf discal line black, highly waved and macular.

*freja pseudojaffra*, *M.* (38-42). The Common Imperial. Ceylon. NR.

β. Unf discal line regular and continuous. Uph white area more extensive.

*freja jaffra*, *But.* S. India. NR.

γ. Below ♂ pale ochreous, darkening at apex and termen F and apex H; ♀ white, outwardly ochreous. Unf discal line ochreous.

\**freja freja*, *F.* Kumaon—Tavoy. NR.

δ. Below ♂ ♀ white; ♂ costa narrowly, apex and termen broadly, bright ochreous; ♀ the ochreous apex unf very wide. Unf discal line ochreous.

*freja regia*, *Evans.* Mergui. C.

**H71. Ticherra.—The Blue Imperial.**

♂ above dark purple blue, border 1 mm; black tornal spots H coalesced and crowned by two white spots. ♀ dark brown. Below WSF bright ochreous, faintly marked as in *Cheritra*; DSF pale brown, markings more prominent and some obscure central markings.

*acte*, *M.* (34-38). The Blue Imperial. Kumaon—Burma. NR. (= *symira*, *Hew.* : *idina*, *Fr.*).

**H72. Biduanda.—The Posies. (Plate 29).**

1a (3a). Unf white, discal band not of same width throughout and broken in middle; unh upper spot of discal band in line with rest. Unf prominent chocolate spots in cell, narrow ferruginous or brown line end cell and chocolate discal band, which is very wide to v3 and merges into the chocolate apex; margin below v3 ochreous, inwardly edged by a dark line. Unh white with basal brown rings or spots, an irregular double discal line, the upper end of which is darker and filled in as a single line, a very narrow sub-marginal line; prominent tornal black spots and metallic scales. Tails v1 4 mm, v2 7 mm, ♀ v3 1½ mm; no ♂ brand.



H72. Biduanda.—The Posies. (Plate 29)—*contd.*

1 (2). Unf discal band well separated from line end cell; a narrow dark line beyond upper part of discal band, the outer edge of which and of the discal band is obscurely white edged; the discal band in 2 consists of 2 narrow chocolate or ferruginous lines, which may coalesce, and in 3 of 2 chocolate lines, which are often coalesced. ♂ above dark brown; costa H orange and tornal area broadly pale shining blue with black marginal spots in 1c and 2.

a. Below markings not so pronounced and paler. ♂ above paler; upf with a sharply defined white patch at bases 2 and 3. ♀ dark brown with an orange discal patch on F and some faint tornal grey scales H.

*melisa cyara*, Hew. (20-25). The Blue Posy. Sikkim—N. Burma. VR.

β. Below strongly marked. ♂ upf no white patch. ♀ dark brown with a small orange spot end cell F, which may be obsolete or diffused; pale tornal area of variable extent and colour from bluish to white and more or less divided by darker veins.

\**melisa melisa*, Hew. Karens—S. Burma. NR.

2 (1). Unf upper part of discal band coalesced to upper part of bar end cell and to line beyond, outwardly edged by a narrow, clearly defined, irregular white line; discal band in 2 consists of a single ochreous line and in 1b of a single chocolate line (or 2 spots); sub-marginal line regular, not waved, widened inwardly in 1b nearly to the discal band. Unh 2 narrow single lines at end cell (in *melisa*, there is an outer narrow line and an inner double line) which may be coalesced. ♂ above dark shining violet blue, border 1 mm, tornal spots in 1c and 2 crowned by bluish white scales. ♀ dark brown, a prominent orange discal spot on F; a broad bluish white tornal area H, which is not divided by darker veins.

*nicévillei*, Doh. (30-33). The Violet Posy. Tavoy—S. Burma. R.

3a (1a). Unf ochreous, apex broadly washed brown, markings brown on the brown area, ochreous elsewhere; discal band of even width unbroken. Unh very like 1a, but upper part of discal band in 7 shifted to over cell bar. Unf spot base cell, bars mid and end cell. ♀ dark brown, a broad orange discal patch F and bluish tornus H.

3 (4). ♂ no brand. Above dark brown; upf with an orange discal patch, beyond which the apex is deep violet blue, sparsely frosted white scales; uph termen and tornus frosted white scales, mixed anteriorly with blue scales. Tails v1 2 mm, v2 5 mm, v3 1 mm.

*scudderii*, Doh. (27-30). The Frosted Posy. Dawnas to S. Burma. VR.

4 (3). ♂ uph a shining dark brown brand about base 6 and shining yellow beyond. ♂ above dark violet blue, no border; a more or less obscure or obsolete reddish discal patch on F. Tails v1 4 mm, v2 10 mm, v3 in ♀ 2 mm.

\**thesmia fabricii*, M. (32-35). The Dark Posy. Dawnas—S. Burma. NR.

β. ♂ upf discal red patch more prominent; ♀ orange red area more restricted. Unf apex not brown washed.

*thesmia thesmia*, Hew. S. Mergui. R.

**H73. Marmessus.—The Posies. (Plate 29).**

1 (2). Upf orange red, base and apex dark brown. ♂ uph pale shining blue, becoming purple towards apex and cerulean towards tornus; ♀ uph dark brown with a more or less prominent orange discal patch. Below as *thesmia* but unf all ochreous and unh upper part of discal band in 6 and 7 shifted in, apex broadly pale ochreous. Tails v1 4 mm, v2 10 mm, v3 2 mm. ♂ uph large oval speckled brand about origin v7 with a white area below and a nacreous area above: unf a corresponding white patch and nacreous area before mid dorsum: dorsum F much bowed.

\**lisias boisduvali*, M. (26-30). The Common Posy. Karens—S. Burma. C.

2 (1). No ♂ brand. Both sexes resemble the ♀ of *lisias*, but the uph is plain dark brown and the species is much smaller. The ♀ has the wings more rounded and the orange area upf is somewhat restricted. Below as *lisias*.

*archbaldi*, nov. (22-26). The Small Posy. Rangoon—Tavoy. R.

**H74. Eoxylides.—The Branded Imperial.**

Above dark brown; ♂ upf some sparse blue scales above mid dorsum; uph a broad white tornal area to v5, lobe black and two confluent tornal black spots, the white area edged bluish in ♂. Below bright ferruginous: F unmarked; H tornal area as above, an irregular black discal line and a white bar end cell. Tails v1 2 mm, v2 10 mm, v3 2 mm.

*tharis*, Hub. (34-36). The Branded Imperial. Dawnas—S. Burma. VR.

**H75. Thamala.—The Cardinal. (Plate 29).**

♂ above brilliant deep scarlet; upf a dark border and some of the veins black. ♀ dark brown; a large central orange area F intersected by a broad dark brown streak from base running below cell. Below crimson overlaid ochreous scales, obscure bars end cells, a narrow dark obscure waved discal line; tornal markings reduced and some sparse white scales. Tails v1 2 mm, v2 3 mm, in ♂; ♀ v1 3 mm and v2 7 mm.

α. ♀ uph no tornal grey scaling, costa fulvous, veins usually fulvous and a good deal of fulvous on disc: upf fulvous area continuous and over whole disc, divided by the black basal bar under the mv, veins fulvous on the fulvous area.

\**marciana miniata*, M. (34-36). The Cardinal. Bhamo—Karens. R.

β. ♀ upf vs black: uph usually traces of grey scaling and much less orange on disc.

*marciana petrella*, Fruh. Dawnas, Ataran. NR.

γ. ♀ upf much darkened, red area restricted and divided by black veins: uph costa at most reddish, tornal half of wing grey.

*marciana sparanisa*, Fruh. Tavoy—S. Burma. NR.

**H76. Rathinda.—The Monkeypuzzle. (Plate 29).**

♂ ♀ above dark brown; a white spot end cell F continued into 2 and 3; 2 black tornal spots H crowned by a dark ochreous fascia. Below ochreous brown to white; on F some irregular dark basal markings, a curved white discal band, beyond which the apex is ochreous brown, bearing a white sub-marginal line; H covered with numerous irregular markings. H angled at v4. Tails v1 2 mm, v2 6 mm, v3  $2\frac{1}{2}$  mm.

\**amor*, F. (26-28). The Monkeypuzzle. Ceylon. S. India.—Assam. NR. (= *tripus*, Cr.).

**H77. Horaga.—The Onyxes. (Plate 29).**

Mostly cyaneous blue above with a dark blue apex F and a prominent white discal patch. Below ochreous or brown with a prominent white discal band across both wings to middle of 1c on H, whence to the dorsum there is a metallic green line; tornal markings prominent and crowned by a metallic green line, which may run to costa. ♂ in Nos. 1 and 2 has an oval ochreous brand along basal half of v1, dorsum bowed. Tails v1 2 mm, v2 4 mm, and v3 1 mm.

1a (3a). Unf ♂ with a well defined brand. Unh white band well defined.

1 (2). Unf either the white band or the dark line bordering it outwardly extends well above v6. ♀ uph blue obscure.

a. Upf blue colour paler and brighter, extending well beyond the end of the discal white patch in 2 and 3; white patch not into 1b; H blue to termen. Unf discal band to costa. Unh discal band of even width. Below ochreous to ochreous brown. Tail at v3 nearly obsolete.

*onyx cingalensis*, M. (30-33). The Common Onyx. Ceylon—S. India. R.

β. Upf blue colour darker, but very variable, never extending beyond the discal white patch, which always enters 1b; very variable below. Tail at v3 short. Below in DSF whitish outwardly.

\**onyx onyx*, M. (27-31). Kangra—S. Burma. NR.

γ. ♂ upf white patch small, divided by black veins and not below v2; blue colour absent or restricted to powdery scales at base; H greenish. ♀ white patch very large; base sprinkled dull blue scales; H all brown. Below dark ochreous brown. Tail at v3 comparatively long.

*onyx rana*, DeN. (30-33). Andamans. R.

2 (1). Unf neither the white band nor the dark line bordering it outwardly extends above v6. ♀ uph mostly uniform violet blue. Below clearer ochreous: band on H narrower and more sharply defined. ♂ upf white patch much smaller.

*moulmeina*, M. (28-30). The Yellow Onyx. Sikkim—Burma. NR. (= *sikkima*, M.).

3a (1a). No ♂ brand. Unh white band very narrow and sullied. Unf discal band never above v6.

3 (4). Unh white band diffused outwards, straight. ♂ upf dark brown, white patch nearly to v1; H shining violet nearly to termen. Below dark ochreous brown, outwardly paler.

**H77. Horaga.—The Onyxes. (Plate 29)—contd.**

*albigmacula*, WM. & DeN. (25-27). The Violet Onyx. Andamans. VR.

4 (3). Unh discal band not diffused outwards, somewhat convex. ♂ ♀ above dark brown or violet brown, discal white patch F may extend into 1b. Below uniform, rather dark brownish ochreous.

*viola*, M. (22-28). The Brown Onyx. S. India. Kangra—Burma. R.

**H78. Catapoecilma.—The Tinsels. (Plate 29).**

Termen scalloped and cilia prominently chequered; H not angled, lobe ill developed also tornal markings below. Tails v1 1 mm, v2  $4\frac{1}{2}$  mm and v3  $1\frac{1}{2}$  mm.

1a (3). Below with numerous more or less regular ochreous bands and spots edged metallic green and black.

1 (2). Below rather pale brown bands and spots comparatively irregular, upper part of discal band on F broken up and postdiscal band beyond highly irregular; on H spots at base and mid 7 separate. ♂ above dark violet blue, border 1 mm. ♀ pale violet blue, border broader.

a. In ♀ borders above narrower and inwardly scalloped along termen F.

*elegans myositina*, Fruh. (28-32). The Common Tinsel. Ceylon, S. India. R.

β. Borders broader; in ♀ 3 mm, and inwardly even along termen F.

\**elegans major*, Fruh. Orissa. Mussoorie—Burma. NR.

2 (1). Below bright ochreous, bands and spots regular. Above as last.

*subochracea*, El. (27-29). The Yellow Tinsel. Nagas—Tavoy. R.

3 (1a). Below no regular spots or bands; chrome yellow, densely and evenly striated with black and bearing scattered greenish silver metallic scales and streaks. ♂ above smoky purple black, obscurely violet shot; on F near base there may be some powdery dull blue scales; ♀ as No. 1.

*delicatum*, DeN. (32-35). The Dark Tinsel, Sikkim—Assam. R.

**H79. Chliaria.—The Tits. (Plate 29).**

1a (3). Unh a prominent black spot in 7 towards base; unf discal band completely broken at v4.

1 (2). Unf small black costal spot above mid cell. ♂ above pale blue with broad black apex and termen F, narrow black costa and apex H; the black apex F shot deep purple blue; blue colour F of very variable extent. ♀ brown, lower part of disc F may be whitish; H tornal area broadly bluish white and veins darkened. Below white, faint bars end cells; markings ochreous, black edged; upper part discal band on F much wider than lower part; discal band on H broken in 4 and 6; tornal spots prominent, orange crowned. Tails delicate, v1 4 mm., and v2 2 mm.

**H79. Chliaria.—The Tits. (Plate 29)—contd.**

*othona*, Hew. (24-27). The Orchid Tit. South India. Dun—Burma. NR. Andamans. VR. (= *eltola*, Hew.).

2 (1). Unh no spot on costa. ♂ above pale blue, broadly black bordered, the inner portion of the border shot iridescent purple blue. ♀ dark brown, discs whitish. Below pale grey, marking concolorous and black edged. Tails v1 3 mm and v2 1½ mm.

a. Unh upper spot of discal band black. ♂ blue colour very restricted.

*kina kina*, Hew. (26-29). The Blue Tit. Dun—Kumaon. R.

β. Unh upper spot of discal band as rest. Blue colour very variable.

\**kina cachara*, M. (27-31). Sikkim—Dawnas. NR.

3 (1a). Unh no spot in 7 towards base. ♂ above dark purple blue, except for black apex and border shot shining purple. ♀ brown, prominent white tornal area H, bearing marginal black spots. Below faint bars end cells; discal band narrow, ochreous, white edged, placed much nearer end cell than margin, straight and continuous on F, broken sharply on H at v4; very little orange at tornus.

a. Larger. Below white, apex F broadly ochreous. Tails v1 8 mm and v2 4 mm.

*merguia watsoni*, Swin. (27-29). The Purple Tit. Chin—Karens. R.

β. Smaller. Below grey, apex F broadly pale ochreous. Tails v1 8 mm and v2 4 mm.

*merguia merguia*, Doh. (21-29). Dawnas—S. Burma. R.

**H80. Hypolycæna.—The Tits. (Plate 29).**

1a (3). Unh a prominent spot in 7 near base. Tails v1 5 mm, v2 4 mm.

1 (2). Unh basal spot in 7 black. ♂ above dark reddish purple brown; ♀ dark brown, obscure black tornal spots H, crowned deep orange. Below white, faint bars end cells; black edged obscure ochreous discal band, broken at v4 on F and H and upper part wider; small tornal spots, obscurely yellow crowned.

*nilgirica*, M. (28-32). The Nilgiri Tit. Ceylon, S. India. R.

2 (1). Unh basal spot in 7 ochreous. Above very dark shining brown; ♀ paler and duller; prominent orange crowned tornal spots H. Below white, all markings narrow ochreous, white edged.

a. Uph spot in 2 only crowned ochreous. Unf discal band slightly shifted in at v4, apex broadly and margin narrowly ochreous; unh discal band broken at v4 and slightly at v6: tornal markings prominent, space 1c mostly ochreous.

\**thecloides thecloides*, Fd. (30-32). The Brown Tit. Tavoy—S. Burma. R.

β. Uph ochreous tornal area wider, from 1c to 3. Unf discal band straight, termen only narrowly ochreous. Unh discal band straight to v4: ochreous crown to spot in 2 prominent but hardly spreading sideways, space 1c being mostly dark.



**H80. Hypolycæna.—The Tits. (Plate 29)—contd.**

*thecloides nicobarica*, Evans. (31-33). Central and South Nicobars. R.

3 (1a). Unh no spot in 7 near base. ♂ above changing from black to shining purple except for black borders. Upf prominent black area of modified scales on disc. ♀ above dark brown; uph an obscure white disconnected discal fascia in 1c-3: tornal spot in 2 prominently white edged and a narrow white sub-marginal fascia in 3-4. Below grey with faint ochreous tinge, double bars end cells; an ochreous, white edged, discal line, continuous on F, broken on H at v4 and v6, tornal spot in 2 prominent, ochreous crowned. Tails v1 6 mm and v2 5 mm.

a. Smaller. In ♀ uph tornal spot in 1c hardly defined.

*erylus himavatus*, Fruh. (32-36). The Common Tit. Sikkim—Burma. C.

β. Larger. In ♀ uph tornal spot in 1c defined by white edging. *erylus andamana*, M. (34-38). Andamans. NR.

**H81. Zeltus.—The Fluffy Tit. (Plate 29).**

♂ above very pale blue, powdery on F and confined to base; the broad black apex F and H shot deep purple. ♀ dark brown, tornal spots in 1c and 2 prominently white ringed and on a white area. Below bluish white, apices broadly pale ochreous brown, markings darker; double lines end cells; a narrow discal line, continuous on F, broken at v3, 4 and 6 on H; prominent black costal spot near base 7; tornal spots prominent, but not crowned orange. Tails fluffy at v1 13 mm, at v2 7 mm.

\**etolus*, F. (28-32). The Fluffy Tit. S. India. Sikkim—Burma. NR. (= *amasa*, Hew.).

**H82. Artipe.—The Green Flash. (Plate 29).**

♂ above shining blue, black bordered; ♀ dark brown; lobe green, black centred. Below verdigris green with a narrow white discal line and end cell bars; in ♀ tornal area H broadly white.

\**eryx*, L. (♂ 40, ♀ 56). The Green Flash. Sikkim—Burma. Andamans. R. (= *amyntor*, Herbst.).

v. *skinneri*, WM. & DeN. Below yellow. VR.

**H83. Deudoryx.—The Cornelians. (Plate 29).**

♂ above red with broad dark brown border, ♀ brown with sometimes the disc F paler. Below with cell bars and a discal band; H lobe black, orange crowned, a black spot in 2 and some metallic scales in 1c. Above lobe black centred.

1 (2). Below markings very broad, continuous. Below uniform brown, markings white edged. ♂ scarlet above.

a. Smaller. Below rather dark brown.

*epijarbas epijarbas*, M. (34-38). The Cornelian. Ceylon. S. India—Orissa. NR.



H83. *Deudoryx*.—The Cornelians. (Plate 29)—*contd.*

β. Larger. Pale brown below.

*epijarbas ancus*, *Fruh.* (38-43). Chitral—Kumaon. NR.

γ. Very variable; usually rather dark brown below.

*epijarbas amatus*, *Fruh.* (36-44). Sikkim—Burma, Andamans, C. South Nicobars, VR.

\**v. diara*, *Swin.* Below very dark brown, outer part of the disc F and upper half H white, crossed by black veins. R.

2 (1). Below pale polished grey, outwardly pale ferruginous; markings narrow, catenulated, prominently white edged, slightly darker than the ground, of separated spots on F, conjoined on H; discal band H much nearer margin and upper spot in line. ♂ above paler red; ♀ may have a pale red discal area on F.

a. Below markings prominent, complete.

\* *hypargyria gaetulia*, *DeN.* (40-44). The Scarce Cornelian. Assam—N. Shan States. R.

β. Below markings becoming obsolete and may be reduced to spots in 2, 3, 4H.

*hypargyria hypargyria*, *El.* Karens. VR.

H84. *Virachola*.—The Guava Blues. (Plate 29).

Below markings broad, bars end cells more or less white edged, discal band and tornal markings as in *Deudoryx*. ♂ brand uph always to base 6.

1a (3). Unf discal band continuous.

1 (2). Unh no spot base 7. Unf discal band straight, prominent. Tuft dark brown. Below pale brown, markings slightly darker; no spot in cell F nor near base 7 H. ♂ above dark fuscous brown sometimes paler on disc, shot brilliant violet blue on lower part of disc F and on most of H; tornal spot in 2 usually present and some bluish scales between it and the lobe. ♀ paler fuscous brown, darker towards end cell F, beyond which there is an ochreous patch and sometimes a similar tornal patch; H marginal spot in 2 usually prominent and orange crowned.

*isocrates*, *F.* (40-44). The Common Guava Blue. Ceylon, India to N. Shan States. C. (= *dohertyi*, *Tyt.*).

2 (1). Unh nearly always spot base 7. Unf discal band elbowed: rarely a spot in cell. Below very variable, pale to dark brown, often purple washed; markings darker than ground, centrally brown, outwardly black and more or less white edged. ♂ above blue with a broad dark brown border F, much blacker in cell, beyond which there may be a dark ochreous patch. ♀ blue colour paler and more extensive, a whitish or pale ochreous patch beyond cell F.

a. ♂ above pale, shining blue. ♀ pale blue, white patch diffused. Below dull, markings less prominent.

*perse ghela*, *Fruh.* (48-52). The Large Guava Blue. Ceylon. S. India. NR.

β. Darker, but very variable above and below. ♀ upf white patch smaller, not diffused. ♂ unf a brand above mid vl.

\* *perse perse*, *Hew.* Kangra—Assam, Orissa. Burma. NR.

H84. *Virachola*.—The Guava Blues. (Plate 29)—*contd.*

3 (1a). Unf discal band broken, lower part shifted in. Unh spot base 7 and usually spot in cell. Below paler, markings dark and prominent. Unf nearly always a spot in cell. Upf ♂ ♀ ochreous or white patch absent.

a. Unf discal band completely dislocated.

*smilis smilis*, Hew. (48-52). The Scarce Guava Blue. Jaintia Hills. S. Burma. VR.

β. Unf discal band partially dislocated.

*smilis maseas*, Fruh. Andamans. VR. (= *nicevillei*, Tyt.).

H85. *Rapala*.—The Flashes. (Plate 29).

Normal pattern below consists of a bar end cell and a discal band followed by a more or less distinct sub-marginal line; tornal spots more or less distinct. Nos. 1-4 are abnormal.

1a (9a). ♂ uph brand fills base of 6 or (in Nos. 5-8) has a detached portion along the base of v6.

1b (3a). ♂ uph brand enters cell.

1 (2). ♂ above dark shining indigo blue, no border. Below rich vinous buff: obscure broad, white-edged band of the ground colour, very faint on F. ♂ tuft pale brown.

*rubida*, Tyt. (38-44). The Rosy Flash. Manipur. N. Shan States. R. (= *rosacea*, Tyt.).

2 (1). ♂ above dark indigo, shot brilliant deep blue, borders broad; ♀ shining indigo blue with narrower border. Below purple brown, washed shining purple and bearing a number of large, white ringed, dark spots; F spot in cell, double spot end cell, 3 discal and 3 apical spots; H 2 costal spots in 7, inner one very large, spot in cell double, spot end cell and discal row. ♂ brand shining dark blue; tuft brown, prominent.

\**subguttata*, El. (32-35). The Spotted Flash. Karens—S. Burma. R.

3a (1b). ♂ uph brand not into cell. Below banded, not spotted.

3b (5a). Below pattern abnormal.

3 (4). Below rather pale brown, marked with narrow white lines; F line near end cell, continued into 1b, a pair of discal lines joined at the lower end, a short apical line and lunular sub-marginal lines; H line through centre of cell from 1c-8, a discal pair, broken at 1c, a postdiscal line and 2 sub-marginal lunular lines; prominent tornal black spots, crowned orange and metallic scales. ♂ above brilliant shining blue, confined to base on F. ♀ dull pale purple blue, bases darkened and borders broad. ♂ brand small, pale grey in centre of polished patch; tuft black, prominent.

\**kessuma deliochus*, Hew. (30-33). The Whiteline Flash. Shan States—S. Burma. R.

4 (3). Below yellowish white, F and H a very large greenish white patch end cell and a very broad discal band, margins greenish brown; tornal markings small, no orange. ♂ above dark shining purple, shot brilliant blue on H, borders black on F. ♀ unknown. ♂ brand pale brown, circular, behind origin v7 and with a detached portion at base 6; tuft brown, short.

H85. *Rapala*.—The Flashes. (Plate 29)—*contd.*

*\*abnormis*, El. (30-33). The Abnormal Flash. Karens—S. Burma. R.

5a (3b). Below pattern normal.

5b (8). ♂ unf tuft mid dorsum.

5 (6, 7). Below very pale brown, markings obscure, broad, white edged either side. ♂ above shining purple blue, broad black border on F. ♀ paler, duller and border narrower. ♂ brand dark brown, elongated, runs along over v7 and fills base 6; tuft pale brown inconspicuous. Apex F and tornus H more produced than usual.

*refulgens*, DeN. (31-33). The Refulgent Flash. Nepal. Assam—Karens. R.

6 (5, 7). Below bright ferruginous with a dark ferruginous discal band, normally placed on H, but on F just beyond end cell; no bars end cells; tornal markings reduced, but crowned powdery white scales. ♂ above purple brown, shot deep blue at base F and over most of H; ♀ pale ferruginous; lobe ferruginous. ♂ brand pale yellow, circular, above origin v7 and with a detached portion along the scv between origins vs 6 and 7; tuft brown, inconspicuous.

*lankana*, M. (38-41). The Malabar Flash. Ceylon. S. India. R.

7 (5, 6). Below bright ochreous. ♀ paler; discal line narrow, brown, outwardly white edged and on F curved in at upper end. ♂ above red, broad border F running from lb along dorsum; black border F and red area H shot rich purple. ♀ brown. ♂ brand as in last; tuft pale ochreous to ferruginous.

a. ♂ above coppery red. ♀ often paler on disc upf. Below pale yellow. Very variable.

*\*suffusa suffusa*, M. (33-37). The Suffused Flash. Assam—S. Burma. NR. (= *testa*, Swin.).

β. ♂ above bright red, not entering cell F and veins not black; H cell and dorsum and veins black; ♀ plain brown. Below ♂ coppery ochreous; ♀ pale yellow, markings prominent; tornal spot in 2 crowned ochreous.

*suffusa rubicunda*, Evans. (33-35). Andamans. NR.

8 (5b). ♂ unf no tuft mid dorsum; brand uph as in No. 5 but smaller. Above dull red with broad fuscous borders F and dusky veins, the red colour may be more or less fuscous overlaid, especially in ♀. Lobe small, ochreous. Below pale brown, single white bars end cells, discal bands rather broad, slightly darker than ground, white edged outwardly and on F much curved in apically; on H curved parallel to termen. ♂ tornal spots in 2 prominent, orange crowned.

*hades*, DeN. (39-44). The Malay Flash. Dawnas—S. Burma. VR.

9a (1a). ♂ uph brand entirely above v7 and mostly behind its origin.

9 (10a). ♂ unf large polished area mid dorsum; brand brown, large, circular; tuft dark brown, prominent; upf a black discal patch of modified scales. ♂ above very dark blue, shot brilliant deep blue; ♀ dull purple, shading to the dark brown border. Below

**H85. *Rapala*.—The Flashes. (Plate 29)—*contd.***

than at lower end. ♂ brand dark brown, inconspicuous, behind origin v7; tuft pale brown, often inconspicuous or absent in Nos. 18 and 19, always absent in Nos. 20 and 21. Tonal spots unh not prominent, spot in 2 always orange crowned.

18b (20a). Above blue.

18 (19). ♂ above dark purple blue, shot brilliant deep blue, broad border on F. ♀ paler, steely blue above. Below rather pale ochreous brown, sometimes purple glossed, discal bands prominently dark brown, obscurely white edged outwardly.

*buxaria*, DeN. (38-42). The Shot Flash. Sikkim—Assam. R.

19 (18). ♂ above not shot blue. Very variable above and below. ♂ above dark steely blue to purple, border broad on F and often with an orange discal patch; ♀ paler. Below very pale brown to dark ochreous brown, with or without a purple or rosy gloss; discal band narrow ferruginous or dark brown, outwardly obscurely white edged.

a. Generally paler and smaller.

*nissa nissa*, Kollar. (34-38). The Common Flash. Kashmir—Sikkim. C. (= *maculata*, Stg.).

β. Generally larger and brighter.

*nissa rectivitta*, M. (38-40). Sikkim—Assam. C. (= *subpurpurea*, Leech. : *ranta*, Swin. : *tacola*, Fr.).

γ. *rosacea*, DeN. Below rosy. R.

γ. Always with a large orange spot upf; steely blue above.

*nissa nissoides*, Swin. N. Burma—Shan States. C.

20a (18b). Above with red areas. Below rather pale grey brown discal band slightly darker and white-edged outwardly: cell bars faint.

20 (21). ♂ upf red area quadrate, not extending behind end cell, crossed by black veins: more extensive in ♀, but not crossed by black veins. Upf a red sub-marginal area of varying extent more or less crossed by dark veins. Above more or less purple glossed. Unf discal band broad, continued to dorsum.

*micans selira*, M. (32-34). The Red Himalayan Flash. Chitral—Kumaon. C. (= *roana*, Fruh.).

21 (20). ♂ ♀ upf red area extending nearly to base and not crossed by black veins. Upf red area not as a band, but extending right up to cell, more restricted in ♀. Above no purple gloss. Unf discal band as narrow as on unh and not extending below v2.

*extensa*, Evans. (23-33). The Chitral Flash. Chitral. C.

**H86. *Sinthusa*.—The Sparks. (Plate 29).**

Below markings very much as in *Rapala*, bars end cells and discal band.

1 (2a). Below white, markings yellow centred and black edged; discal band catenulated, broken usually at v4 F and H; unh dark bar mid cell and another in 7 above it; tonal spots prominent, orange obscure, metallic scales in 1c. ♂ above greyish white, base F suffused dark brown and border very broad. ♀ as ♂ but pale

H86. *Sinthus*.—The Sparks. (Plate 29)—*contd.*

area much more extensive. Lobe ochreous. ♂ unf no tuft, but with an oval orange patch of modified scales along v1.

*virgo*, El. (32-36). The Pale Spark. Sikkim—Manipur. Bernardmyo. VR. (= *virgoides*, Tyt.).

♀ *v. confusa*, Tyt. The greyish white colour replaced by shining light blue. VR.

2a (1). Below not usually white and markings not yellow centred. ♂ unf with a tuft. Lobe above black centred with orange and metallic scales. ♂ above very deep blue, shot rich blue, border F broad; H rich shining purple blue; black portions of wing with a bronzy gloss. ♀ brown, often with a pale discal patch F and pale tornal area H.

2 (3). Below pale grey, no ferruginous tinge, markings broad, dark grey, white edged both sides; F discal band irregular, broken at v4; on H broken at 2, 4 and 6; cell bars nearly coalesce with the discal bands; H black spot mid cell and a larger one above it in 7. ♂ uph blue colour extends from v1 to v6 and through lower half of cell.

a. Below markings comparatively narrow, catenulated, marginal markings obscure. ♀ dark brown, may be slightly paler on disc F and before margin H and there may be some obscure bluish white patches in 1c-4 H.

*chandrana chandrana*, M. (28-32). The Broad Spark. Kangra—Kumaon. R.

β. Below markings broader; in WSF marginal markings prominent: DSF sometimes nearly white below. Typical ♀ as in a.

\**chandrana grotei*, M. Sikkim—Burma. NR. (= *pratti*, Leech.).

♀ *v. albidus*, Evans. Upf with a sharply defined or diffused yellowish white discal patch; uph from as in typical form to almost entirely bluish white.

♀ *v. rubidus*, Evans. Upf with a more or less distinct red discal patch.

3 (2). Below bars end cells and discal band very narrow, nearly linear, ferruginous, outwardly white edged; on F discal band continuous unbroken, on H broken at v2 and 4. ♀ as in No. 2 a above.

a. ♂ uph blue colour confined to margin in 1c, 2 and 3, extending to end cell in 3 and 4. Below pale grey with a ferruginous tinge; in ♀ apex F pale ferruginous.

*nasaka pallidior*, Fruh. (28-32). The Narrow Spark. Kangra—Kumaon. R.

β. ♂ uph blue in 1c-4 from margin to mid cell and along margin to 6. Below darker, markings more prominent. Unf termen ferruginous.

\**nasaka amba*, Kirby. Sikkim—Burma. R. (= *obscurata*, Fr.).

H87. *Bindahara*.—The Planes. (Plate 29).

♂ above velvet black; above tail H and lobe pale ochreous. ♀ dark brown; tornal area, lobe and tail white, veins black,

**H87. Bindahara.—The Planes. (Plate 29)—contd.**

prominent marginal spot in 2. Below ♂ ochreous; F outer half and H apex dark brown, ♀ white; F broad dark brown band through mid cell and a broad discal band, broken out at v4; H 4 basal spots, double spot end cell and a much broken discal band consisting of 2 parallel lines, the interval between in the ♂ and sometimes in the ♀ being filled in dark brown in 6 and 7; black tornal spots in 1c and 2 crowned metallic scales and by the sub-marginal dark line.

a. ♂ uph margin brilliant purple blue in 3-5, followed by green in 2. Below ♂ pale ochreous; dark bands very prominent in ♀.

\**phocides moorei*, Fruh. (38-42). The Plane. Ceylon. S. India. R. (= *sugriva*, Auct.).

β. ♂ uph uniform dark brown. Below darker ochreous. *phocides phocides*, F. (36-40). Sikkim—Burma. Andamans. R. (= *ines*, Swin.).

γ. As last, but below paler and all markings tend to complete obsolescence. ♀ below markings pale ochreous.

*phocides areca*, Fd. (36-40). Nicobars. C. (= *kamorta*, Fd.).

**H88. Araotes.—The Witch. (Plate 29).**

♂ upf black, basal half shot brilliant blue; uph brilliant deep blue, except for dark brown costa, ♀ dark brown, disc F obscurely reddish; H tornal area bluish white, veins black. Below white; F basal  $\frac{1}{2}$  and apical  $\frac{1}{2}$  ochreous, black edged; H base and disc with irregular black markings, apex ochreous; tornal marking prominent, crowned metallic scales.

\**lapithis*, M. (28-32). The Witch. Sikkim—Burma. R.

**H89. Sithon.—The Plush. (Plate 29).**

♂ above brilliant deep shining blue, border 2 mm to 3 at apex; H terminal  $\frac{1}{2}$  blue, rest black. ♀ dark brown, reddish on F; tornal area H bluish white and veins black. Below white; outer  $\frac{1}{2}$  F and outer  $\frac{1}{2}$  H dark chocolate brown in ♂, bright ochreous in ♀; F dark area divided by a white discal line, beyond which the apex is paler: H apex and upper part termen paler, black discal line in 1b and 1c; tornal area narrowly black, outwardly white edged and crowned metallic green scales in 1c and 2, a second metallic green line in 1c and a terminal in 1b.

\**nedymond ismarus*, Fruh. (30-34). The Plush. Dawnas—S. Burma. NR. (= *chitra*, Hors.).

**H90. Liphyra.—The Moth Butterfly. (Plate 27).**

Above brown to rich yellow with an irregular, broad black border; upf a large black spot at end cell, extending into bases 2 and 3; uph a black spot end cell and large spots at bases of 2 and 3. Below dull yellow, marked rather as above.

\**brassolis*, Wd. (86-92). The Moth Butterfly, Sikkim—Burma. VR.



## I. HESPERIIDÆ.

**Key to Genera** (of Asia to the limits of the Oriental Region. Type species of genus in brackets).

1a (27a). Body shorter than dorsum H. Larva on dicotyledons. Egg dome-shaped, ribbed.

1b (6a). Palpi third joint peculiar, long, thin, naked, blunt, projected in front of the face and looking rather like an awl: emanating from a stout second joint, which is erect and appressed to the face. Antennal club long, gradual, curved at the thickest part and tip pointed. F v2 from near base: v4 nearer v5 than v3 and v5 nearer v6 than v4. H v2 never after v7: v5 well marked and usually nearer v6. H produced or angled at v 1b. Hind tibiæ with 2 pairs of spurs. Wings erect in repose.

**Ismeninae.**

1c (4a). H v5 tubular, much nearer v6: cell= $\frac{1}{2}$  wing.

1 (2a). F v1 distorted at base. H tibiæ fringed. ♂ often with a brand upf and v2 bent down towards v1.

*Hasora*, M (*badra*). India and China—Australia. = *Parata*, M (*chromus*).

2a (1). F v1 sinuous, not distorted.

2 (3). Antennal club very long and gradual=half shaft. ♂ often with a brand upf and v2 displaced, also with the hind tibiæ swollen and tufted.

*Ismene*, Swain (*œdipodea*). India and China—Celebes. = *Pola* (*ataphus*), *Burara* (*vasutana*), *Gecana* (*fergussonii*), *Torthrix* (*mu-hintha*), *Sartoria* (*ionis*), *Zehala* (*striata*)—all Swinhoe.

3 (2). Antennal club less than half shaft. Hind tibiæ fringed, not swollen and tufted in ♂.

*Bibasis*, M (*sena*). India—Celebes.

4a (1c.) H v5 not tubular, midway between v 4 and 6: v2 well before v7.

4 (5). H cell=half wing. ♂ hind tibiæ with a long tuft. F cell normal: v4 mid vs 3 and 5.

*Choaspes*, M (*benjaminii*). India and China—Papua. Closely allied to the African genus *Rhopalocampta*, Wallengren (*forestan*), which has v5 H completely absent.

5 (4). H cell much less than half the wing. Hind tibiæ fringed. F cell very long and narrow: v4 nearer v5.

*Budamia*, M (*exclamationis*). India and China—Australia.

6a (1b). Palpi third joint short, stout, conical. F v2 from near base: v5 nearer v6. H v5 well marked and nearer v6: v2 before or opposite v7. Antennal club shorter, curved or angled at or before middle of the club or at its thickest part. Wings flat in repose. ♂ never with a brand or tuft of hairs on the wings (except *Crossiura*).

## Key to Genera—contd.

**Celænorrhinæ.**

6b (10a). H v5 tubular, tornus rounded. Palpi porrect, third joint short, second joint yellow below. Antennæ =  $\frac{1}{2}$  costa, bent at the middle of the club, pointed. H tibiæ with 2 pairs of spurs, tufted in the ♂. Clasp of genitalia large, trifid.

**Capila Group.**

6 (7a). Palpi third joint very short and inconspicuous. Eyes red. ♂ may have a costal fold upf.

*Orthopætus*, Watson (*phanæus*). India and China—Borneo. = *Pteroxys*, Watson, preoccupied.

7a (6). Palpi third joint short but conspicuous. Eyes golden brown or black. ♂ no costal fold.

7b (9). Wings broad: F termen equal to or longer than dorsum.

7 (8). ♂ with no secondary sexual characters on the wings.

*Capila*, M (*jayadeva*). India and China—Hainan. = *Pisola*, M (*sennara*).

8 (7). ♂ dorsum H turned over and with a long tuft of hairs at the tornus.

*Crossiura*, DeN (*pennicillatum*). India and China—Hainan.

9 (7b). Wings narrow: F dorsum longer than termen. H termen very rounded.

*Calliana*, M (*pieridoides*). India and China—Borneo.

10a (6b). H v5 not tubular. H tibiæ with 2 pairs of spurs.

**Celænorrhinus Group.**

10b (14a). F cell equal to  $\frac{2}{3}$  costa and as long as dorsum. Antennæ pointed. Apex F not truncate.

10c (12a). Palpi third joint inconspicuous, in continuation of second which is erect or nearly so.

10 (11). F v4 much nearer 5 than 3: internal veinlets in cell to base of v5 and mid vs 3 and 4. ♂ hind tibiæ with tuft of yellow hairs.

*Charmion*, DeN (*ficulnea*). Burma—Celebes.

11 (10). F v4 about mid vs 5 and 3: internal veinlets to bases 4 and 5. ♂ hind tibiæ with tuft of brown hairs.

*Celænorrhinus*, Hub (*eligius*, American). America, Africa, India and China to Celebes and Batchian. = *Gehlota*, Doh (*sumitra*): *Hantana*, M (*infernus*).

12a (10c). Palpi porrect. F v4 mid 3 and 5. Hind tibiæ fringed.

12 (13). ♂ with a costal fold. Wings rounded: H tornus toothed at v1.

*Achalarus*, Scudder (*lycidas*, American). N. America. India and China. = *Lobocla*, M (*liliana*).

13 (12). ♂ no costal fold. Apex F and tornus H produced.

*Satarupa*, M (*gopala*). India and China—Malayana. = *Seseria*, Matsum (*nigroguttatus*).

14a (10b). F cell much shorter than  $\frac{2}{3}$  costa or dorsum. Palpi porrect.

14b (22a). Apex F not truncate: termen even throughout or slightly excavate in 1b.

14c (17a). H tibiæ fringed.

Key to Genera—*contd.*

- 14d (16). Antennæ bent at the middle of the club.  
 14 (15). F mv very arched between origins vs 2 and 3. Palpi second joint smooth, white with a brown tip.  
*Tagiades*, Hub (*japetus*). Africa, India and China—Australia.  
 15 (14). F mv straight. Palpi yellow below.  
*Abraximorpha*, Elwes (*davidii*). India, Burma and China.  
 16 (14d). Antennæ aberrant, bent beyond thickest part of club, apiculus very slender and short. Wings produced.  
*Odina*, Mab (*chrysomelæna*). India—Celebes. = *Entheus*, Ob (*bicolor*).  
 17a (14c). Hind tibiæ with a tuft in the ♂.  
 17 (18a). Mid tibiæ with a tuft in the ♂.  
*Moorea*, Evans (*trichoneura*). India—Malayana. Philippines.  
 18a (17). Mid tibiæ plain.  
 18b (21). H dorsum equal to or longer than costa.  
 18c (20). H costa evenly rounded at apex.  
 18 (19). H v2 opposite v7.  
*Pintara*, nov (*pinwilli*). India—Malayana.  
 19 (20). H v2 well before v7.  
*Daimio*, Murray (*tethys*). India and China—Celebes.  
 20 (18c). H costa distinctly angled at the apex, end v8.  
*Coladenia*, M (*indrani*). Africa, India and China—Malayana and Philippines.  
 21 (18b). H costa longer than dorsum. Antennæ chequered, club and crook very short.  
*Sarangesa*, M (*purendra*). Africa, India—Malaya.  
 22a (14b). Apex F distinctly truncate.  
 22b (24a). Apex F truncate at end v3. H more or less angled at end v4.  
 22 (23). Hind tibiæ fringed.  
*Darpa*, M (*hanria*). India—Malayana. Philippines.  
 23 (22). Hind tibiæ with a tuft in the ♂.  
*Tapena*, M (*thwaitesi*). India—Malayana.  
 24a (22b). Apex F truncate at end v4. H more or less angled at ends vs 4 and 7.  
 24 (25a). Antennæ tip pointed. Hind tibiæ with a tuft in ♂.  
*Ctenoptilum*, DeN (*vasava*). India, Burma and China.  
 25a (24). Antennæ tip blunt.  
 25 (26). ♂ with a short dense tuft of white hairs on the fore coxæ. Hind tibiæ fringed.  
*Odontoptilum*, DeN (*sura*). India and China—Celebes.  
 26 (25). ♂ with a long pencil of radiating black hairs attached

## Key to Genera—contd.

Wings flat, erect or semi-erect in repose: low flying. Larva on dicotyledons. Eggs strongly ribbed.

**Hesperiinæ.**

27 (28a). Antennæ club straight. Cilia plain.

*Gomalia*, M (*albofasciata*). Africa, India.

28a (27). Antennæ club more or less bent.

28b (31). F v4 mid 3 and 5. Cilia prominently chequered.

28c (30). H termen even.

28 (29). ♂ hind tibiæ without a tuft: upf costal fold absent or vestigial.

*Syrichthus*, Bdv (*proto*). Africa, Europe—India and China. = *Sloperia* (*poggei*), *Favria* (*cribrellum*), *Muschampia* (*proto*), *Powellia* (*preoccupied*), all Tutt: *Spialia*, Swin (*galba*): *Tuttia* (*tessellum*), *Ramburia* (*antonia*), *Reverdinia* (*staudingeri*), all Warren.

29 (28). ♂ hind tibiæ with a tuft: upf costal fold prominent.

*Hesperia*, F (*malvæ*). America, Europe—India and China. = *Pyrgus*, Hub (*syrichthus* American): *Urbicola*, Barbut (name for a group): *Battus*, Scop (*preoccupied*): *Scelothrix*, Ramb (*carthami*): *Bremeria*, Tutt (*bieti*): *Urbanus*, Hub (unpublished).

30 (28c). H termen crenulate. ♂ upf with costal fold and a brush unf in one species.

*Carcharodus*, Hub (*lavatare*). Europe—India. = *Reverdinus*, Ragusa (*altheæ*): *Spilothyrus*, Dupon (*altheæ*).

31 (28b). F v4 much nearer v3 than v5.

*Erynnis*, Schrank (*iages*). America, Europe—India and China. = *Thymeles*, F (*tages*): *Nisoniades*, Hub (*bromus*, American): *Thanaos*, Bdv (*juvenalis*, American): *Hallia*, Tutt (*preoccupied*).

32a (27b). F v5 always nearer to v4 than to v6, the dev 5 to 6 always distorted just before v5. Hind tibiæ may be fringed, but never tufted in the ♂. ♂ never with a costal fold upf. Wings erect in repose or lower wings may be depressed and given a rotating motion in a horizontal plane. Larva on monocotyledons (except *Cupitha*).

32b (81a). Palpi second joint cylindrical or quadrant, not appreciably flattened at end.

**Heteropterinae.**

32c (65a). Antennæ bent in middle or thickest part of club.

32d (59a). Palpi third joint protruding. Eyes never red. H v2. before or opposite v7 (except *Ge*).

32e (46a). Palpi entirely porrect, third joint prominent, stout. F v5 straight. Antennæ short=half costa or less: apiculus very short or absent.

**Heteropterus Group.**

32f (44a). H v2 well before v7 (except where v7 is distorted in the ♂ of *Aeromachus* and *Ampittia*).

32g (40a). F v2 before v11.

32h (35a). H v7 from before mid v8: v2 from mid base and end cell or nearer base. Antennæ club stout and blunt. Palpi second joint slender and clothed with long hairs. Abdomen usually very long. H termen much produced just below costa.

## Key to Genera—contd.

32 (33a). F v3 opposite v9. Hind tibiæ normally with a single pair of spurs. With hyaline white or yellow markings.

*Aubertia*, Ob (*dulcis*). Europe—India, Burma and China = *Pamphillida*, Lindsey (*palæmon*): *Carterocephalus* and *Pamphila* (used in error).

33a (32). F v3 opposite v10. No hyaline markings.

33 (34). Hind tibiæ with a single pair of spurs. Unh no spots.

*Leptalina*, Mab (*unicolor*). China—Japan.

34 (33). Hind tibiæ with 2 pairs of spurs. Unh spotted. Cilia F chequered.

*Heteropterus*, Dumeril (*morpheus*). Europe—Japan. = *Cyclopides*, Hub and *Steropes*, D and S (*morpheus*).

35a (32h). H v7 from middle or before of v8 and v2 always nearer end cell than base. Hind tibiæ with 2 pairs of spurs.

35b (37a). Abdomen longer than dorsum. Antennæ with short pointed apiculus. F with white spots.

35 (36). F cilia chequered and prominently spotted. Unh with many large white spots. Tegumen divided.

*Isoteinon*, Fd (*lamprospilus*). Japan—Tonkin.

36 (35). F cilia plain and obscurely spotted. Unh grey with only a few obscure whitish spots. Tegumen undivided.

*Chitralia*, nov (*lesliei*). Chitral. = *Elwesia*, Evans. (preoccupied).

37a (35b). Abdomen = dorsum. F no discal hyaline spots.

37 (38a). Antennæ club blunt, stout, arcuate. F broad.

*Barca*, DeN (*bicolor*). W. Thibet. = *Dejeania*, Ob (preoccupied).

38a (37). Antennæ club gradual, short, fine-pointed apiculus.

38 (39). F vs. 11 and 12 separate: v2 from near base. Unmarked.

*Apostictopterus*, Leech (*fuliginosus*). India and China. = *Tacupa*, Swin (*curiosa*).

39 (38). F vs. 11 and 12 approximate, v2 from just before v11. Unmarked except for small apical white spots F and obscure ferruginous bands unh.

*Astictopterus*, Fd (*jama*). India and China—Malayana and Philippines.

40a (32g). F v2 opposite v11. No hyaline spots.

40b (42a). F v5 quite straight. ♂ no brand. Below with prominent scaling. Antennæ club gradual, with short, pointed, apiculus.

40 (41). F v6 from well below apex cell, costa highly arched. Upf no prominent markings.

*Ochus*, DeN (*subvittatus*). India—Tonkin.

41 (40). F v6 from end cell: costa straight. Upf with more or less prominent markings.



## Key to Genera—contd.

- Ampittia*, M (*maro*). India and China—Sumatra.  
 43 (42). Above plain or with very small white spots. Antennæ apiculus short and gradual or very fine and abrupt.
- Aeromachus*, DeN (*stigmata*). India and China—Malayana and Philippines. = *Machacus*, Swin (*jhora*).  
 44a (32f). H v2 about opposite v7. F with hyaline spots.  
 44 (45). F v2 nearer end cell than base.
- Pedestes*, Watson (*masuriensis*). India, China and Tonkin.  
 45 (44). F v2 nearer base than end cell. ♂ may have a tuft unf and the bases vs. 2 and 3 uph swollen.
- Arnetta*, Watson (*atkinsoni*). India—Malayana.  
 46a (32c). Palpi never conspicuously porrect, second joint semi-erect or erect. Antennæ apiculus well defined.
- Suastus Group.  
 46b (55a). F v5 not bent down at origin, so as to be very much nearer v4 than to v6.  
 46c (51a). Palpi third joint normally long, slender, erect.  
 46d (48a). F vs. 11 and 12 quite separate. Antennæ apiculus short.
- 46 (47). H v2 from well before v7. F v4 nearer 3 than 5. ♂ may have alar sex marks.
- Iambrix*, Watson (*salsala*). India and China—Malayana. = *Mimambrix*, Riley (*woolletti*): *Idmon*, DeN (*unicolor*).  
 47 (46). H v2 opposite v7. F v3 mid 4 and 5. F usually with hyaline spots.
- Suastus*, M (*gremius*). India—Malayana.  
 48a (46d). F v11 approximate to v12.  
 48b (50). H no tuft of hairs base costa.  
 48 (49). Antennæ long, equal to cell, apiculus long, fine, hooked. Hyaline spots F and H.
- Scobura*, Elwes (*cephala*). India and China—Malayana.  
 49 (48). Antennæ shorter than cell and equal to half costa, apiculus obtuse, short. May be hyaline spots F.
- Suada*, DeN (*swerga*). India—Philippines.  
 50 (48b). ♂ H tuft of long thin hairs base costa and unf short oblique scales overlying a groove under the basal part of the scv. No hyaline spots: usually a red band upf.
- Koruthaialos*, Watson (*hector*). India—Malayana. Philippines. = *Arunena*, Swin (*nigerrima*): *Corythæalos*, Mab (in error).  
 51a (46c). Palpi third joint very short, blunt, conical. No hyaline spots (except on F in ♀ of *Ge.*).  
 51 (52a). F v11 touches v12. Antennæ =  $\frac{1}{2}$  costa. ♂ unf with a brown band under the origin of v2. Costa F arched more than usual at base. Above unmarked.
- Sancus*, DeN. (*pulligo*). India—Celebes.  
 52a (51). F v11 close to, but not touching v12.  
 52 (53a). Antennæ =  $\frac{1}{2}$  costa, club stout. F v3 just before end cell. Unmarked.
- Stimula*, DeN. (*swinhoei*). India—Burma. = *Watsonia*, Elwes (preoccupied): *Watsoniella*, Bery (*swinhoei*).  
 53a (52). Antennæ =  $\frac{2}{3}$  costa. F v3 well before end cell. H v2 just after v7.



## Key to Genera—contd.

53 (54). Antennæ with a very long, hooked, apiculus. ♂ upf with a circular patch of recumbent hairs under origin v2.

*Ge*, DeN (*geta*). Burma—Malayana.

54 (53). Antennæ with an obtuse apiculus. F broad yellow central band.

*Ilma*, Swin (*jovina*). Celebes.

55a (46b). F v5 bent down at origin and conspicuously nearer 4 than 6 (except *Kerana fulgur*). Palpi third joint short, blunt, conical.

55b (57a). F v3 not close to v4, opposite v10 or 11. Antennæ club slender, gradual. No hyaline spots.

55 (56). Palpi second joint erect. Unmarked or a red band upf. *Kerana*, Dist (*armatus*). India—Malayana. Philippines. = *Tamela*, Swin (*diocles*).

56 (55). Palpi second joint porrect.

*Ancistroides*, But (*longicornis*). Borneo—Celebes.

57a (55b). F v3 very close to v4 and opposite v9. Antennæ club stout. With large hyaline spots.

57 (58). Antennæ =  $\frac{1}{2}$  costa. Palpi porrect. Hyaline spots F and H.

*Udaspes*, M (*folus*). India and China—Malayana.

58 (57). Antennæ over half costa. Palpi erect. Hyaline spots F only.

*Notocrypta*, DeN (*curvifascia*). India and China—Australia. = *Pleisoneura*, Fd (*preoccupied*).

59a (32d). Palpi not protruding, the third joint shows as a nipple and the scales round it are flattened and depressed: second joint stout, erect and appressed to face. Eyes red. Antennæ club stout, apiculus obtuse, pointed.

Erionota Group.

59b (62a). F apex cell rounded: v5 straight.

59 (60a). H v2 well before v7. F large hyaline yellow spots. ♂ upf with glandular streaks along mid v1 and basal half of v2: unf a thick patch of recumbent hairs along v1: uph basal half of vs 2 and 3 swollen, v2 being shifted to near the base.

*Gangara*, M (*thyrsis*). India—Malayana. Philippines.

60a (59). H v2 after v7 unless distorted (*Paduka* ♂).

60 (61). H lower end cell only slightly bent up. F large hyaline spots.

*Erionota*, Mab (*thrax*). India and China—Moluccas.

61 (60). H lower end cell much bent up in ♀. ♂ upf large patch of dense black scales in centre of disc: unf a tuft and H veins swollen and distorted as in *Gangara*.

*Paduka*, Dist (*glandulosa*). India—Celebes.

62a (59b). F upper apex of cell acutely produced.

62 (63a). F v5 straight. H v2 opposite v7. Large hyaline spots F and H. ♂ upf a brand along v1.

*Pudicitia*, DeN (*pholus*). India.

63a (62). F v5 bent down at origin. H v7 well before v2. Above unmarked.

63 (64). ♂ uph a large tuft of black hairs attached below v8. Cells very short. Antennæ long and slender.

## Key to Genera—contd.

*Matapoides*, Druce (*smaragdinus*). Borneo.

64 (63). ♂ upf a brand from mid v1 to below base v3. Antennæ =  $\frac{1}{2}$  costa, club stout.

*Matapa*, M (*aria*). India and China—Moluccas.

65a (32c). Antennæ bent beyond thickest part of club.

Plastingia Group.

65b (80). Palpi third joint erect.

65c (69a). F v3 opposite v9.

65d (68). F v4 much nearer 3 than 5. Antennæ over half costa.

65e (67). ♂ no alar sex marks.

65 (66). H v7 well before v2. Palpi third joint long, thin, erect.

*Oerane*, DeN (*neæra*). Burma—Malayana. Philippines.

66 (65). H v7 about apposite v2. Palpi third joint short and stout as in rest of group.

*Hyarotis*, M (*adrastus*). India—Malayana. Philippines. = *Quedara*, Swin (*comoplæa*).

67 (65e). ♂ unf long tuft of hairs on dorsum partly turned up and partly turned down.

*Kineta*, Lindsey (*microstictum*). India—Malayana. = *Itys*, DeN (preoccupied).

68 (65d). F v4 mid 3 and 5. ♂ upf glandular streak along mid v1 and base v2.

*Zographetus*, DeN (*satwa*). India—Malayana. Philippines.

69a (65c). F v3 opposite v10 or 11. Antennæ long, over half costa.

69b (72a). F v4 usually not nearer 5 than 3.

69 (70, 71). ♂ upf dark oval brand above basal quarter of v1 : unf a tuft mid dorsum : uph a tuft of recumbent hairs in 7 from near origin v8 and tornal cilia elongated. F v5 straight.

*Isma*, Dist (*obscura*). Burma—Malayana. = *Lophoides*, DeN. (*iapis*).

70 (69, 71). ♂ upf may have a stigma from mid v1 to base v4 : an oval brand at basal quarter of v1 : tornal cilia H elongate. F v5 slightly bent down at origin.

*Sepa*, DeN (*cronus*). Burma—Malayana. Philippines.

71 (69, 70). ♂ no alar sex marks.

*Plastingia*, But (*flavescens*). India—Celebes.

72a (69b). F v4 much nearer 5 than 3.

72b (75a). F apex cell not produced, cell shorter than dorsum.

72c (74). Abdomen below brown.

72 (73). Eyes brown. ♂ without alar sex marks.

*Lotongus*, Dist (*calathus*). India and China—Malayana. Philippines.

73 (72). Eyes red. ♂ either a seam upf or a brush uph or both. Tornal cilia H orange.

*Zela*, DeN (*zeus*). India—Malayana. Philippines. = *Zampa*, DeN (*zenon*).

74 (72c). Abdomen below and cilia H white. ♂ unf may have a large area of black modified scales,

## Key to Genera—contd.

*Acerbas*, DeN. (*anthea*). Burma—Malayana. Philippines.

75a (72b). F apex cell actually produced, cell equal to dorsum.

75b (79). Above with prominent hyaline spots. H tornal cilia not orange.

75 (76a). F v2 from mid base and v3.

*Zea*, Dist (*mytheca*). Burma—Malayana.

76a (75). F v2 from much nearer base than v3.

76 (77a). ♂ upf a thin seam from below v2 to base v3: unf a tuft mid dorsum. Cilia H white.

*Eetion*, DeN (*elia*). Burma—Malayana.

77a (76). ♂ no alar sex marks.

77 (78). F v5 straight.

*Unkana*, Dist (*batarā*). Burma—Malayana. Philippines.

78 (77). F v5 vent down at origin.

*Hidari*, Dist (*irava*). Burma—Malayana.

79 (75b). Above no hyaline spots, tornal cilia orange. Below usually green.

*Pirdana*, Dist (*hyela*). India—Celebes. Papua.

80 (65b). Palpi third joint porrect, stout, very long. ♂ upf obscure glandular streak along middle of v2 and uph dorsum clothed long dense hairs.

*Creteus*, DeN (*cyrina*). India, Borneo.

81a (32b). Palpi second joint more or less flattened at the end. Antennæ comparatively short (except in some Australian genera). F v5 usually bent down at origin. Eggs generally smooth.

**Pamphilinæ.**

81b (86a). Antennæ with gradual, well formed, apiculus, usually hooked. Palpi second joint semi-erect: third joint short, porrect.

**Halpe Group.**

81 (82a). F v2 from near base. Antennæ long =  $\frac{3}{4}$  costa. F v4 nearer v5, apex cell produced. Upf from origin v2 basal part of v2 and mv swollen.

*Gehenna*, Watson (*abima*). Burma—Celebes.

82a (81). F v2 from mid base and end cell, opposite v11 or just before it. Antennæ about half costa.

82b (85). H v7 before or opposite v2. F v5 bent down.

82 (83a). Antennæ apiculus very long, as long as club. ♂ in one species with a brand upf in 1b and vs 1 and 2 distorted: H vs 6 and 7 hairpinwise.

*Pithauria*, M (*murdava*). India and China—Malayana. = *Pithauriopsis*, WM (*aichisomii*).

83a (82). Antennæ apiculus never as long as club.

83 (84). ♂ upf usually a brand from mid v1 to base v3 and v1 may be distorted. H vs 6 and 7 hairpinwise when the brand is present.

*Halpe*, M. (*ceylonica*). India and China—Celebes. = *Thoresa*, Swin (*masoni*).

84 (83). ♂ uph long tuft of recumbent black hairs in 7 from origin v8: some glandular scaling about lower edge of cell.

*Onryza*, Watson (*meiktila*). Burma—Siam.

## Key to Genera—contd.

85 (82b). H v2 from well before v7: cell very short and tornus rounded. F v5 straight. ♂ unf a tuft mid dorsum and uph an oval brand in the cell.

*Sebastonyma*, Watson (*dolopia*). India—Burma.

86a (81b). Antennæ with apiculus usually short, abrupt, very fine and upturned, but aberrant in several genera.

86b (96a). F the veinlet inside the cell has no fork to about the origins of vs 3-4. Normally yellow or with yellow markings.

*Pamphila* Group.

86c (88a). Palpi third joint porrect. F v2 from mid base and v11. H v2 from before v7.

86 (87). Apex cell produced. Antennæ=half costa, apiculus short and stout.

*Actinor*, Watson (*radians*). India.

87 (86). Apex cell rounded. ♂ uph with a circular pouch in the cell, whence wax oozes, mv distorted: F dorsum bowed and v1 distorted: unf a yellow tuft near base dorsum over a polished area. Antennæ with fine short apiculus. Larva on dicotyledons. Generally aberrant.

*Cupitha*, M (*purrea*). India—Malayana. Philippines.

88a (86c). Palpi third joint erect. F v2 from just before v11.

88b (93a). H v7 from much nearer end cell than from base and about opposite or after v2.

88c (91a). Palpi third joint long and thin.

88 (89a). Antennæ club, flattened into a hollowed disc, no apiculus. ♂ with a brand upf in the more easterly species.

*Taractrocera*, But (*mævius*). India and China—Australia. = *Bibla*, Mab (*papyria*, Australian).

89a (88). Antennæ club not flattened, apiculus very fine, at right angles to the club.

89 (90). Unf frenulum under basal part v12 absent.

*Oriens*, nov (*gola*). India and China to Australia. = *Nicevillea*, Evans (preoccupied).

90 (89). Unf frenulum under basal part v12 present, consisting of short oblique scales overlying a groove.

*Padraona*, M (*mæsa*). India and China—Moluccas. = *Inessa*, DeN (*ilion*).

91a (88c). Palpi third joint short and stout.

91 (92). ♂ v3 F pushed down at origin towards v2.

*Astycus*, Scudder (*augias*). India and China—Australia. = *Telicota*, M (*augias*).

92 (91). ♂ v3 normal.

*Cephrenes*, Waterhouse and Lyell (*ismenoides*, Australian). India—Australia. = *Corone*, Mab (preoccupied).

93a (88b). H v7 from mid base and end cell, before v2. ♂ usually with a brand from mid v1 to base v4.

93 (94, 95). Antennæ apiculus=club.

*Ochlodes*, Scudder (*nemorum*, American). America. Europe—N. India, China and Japan. = *Augiades*, Auct (in error).

94 (93, 95). Antennæ apiculus=½ width of club.

*Pamphila*, F (*comma*). N. America. Europe—India and China. = *Erymnis* and *Urbicola*, Auct (in error).

## Key to Genera—contd.

- 95 (93, 94). Antennæ without apiculus, club blunt.  
*Adopæa*, Billberg (*thauomas*). N. America. Europe—China. =  
*Thymelicus*, Hub (*actæon*): *Pelion*, Kirby (*thauomas*).  
 96a (86b). F internal cell veinlet with well marked branch to  
 origin vs 3-4. Usually dark brown with hyaline spots. F apex cell  
 produced.  
*Gegenes* Group.  
 96b (99). Palpi erect, third joint short. F v2 just before v11.  
 H lower end cell produced and bent up, v7 before v2.  
 96c (98). Antennæ apiculus short, but well developed and pointed.  
 96 (97). F v5 only slightly bent down at origin: v4 mid 3 and 5.  
 H cilia white. ♂ of one species with tuft unf mid dorsum.  
*Iton*, DeN (*semamora*). India—Celebes.  
 97 (96). F v5 acutely bent down at origin: v4 nearer v5. ♂  
 may have a brush uph and a brand unf: a tuft unf mid dorsum: a  
 discal stigma upf or no sex marks.  
*Baoris*, M (*oceia*). Africa and Syria—India, China and Australia.  
 = *Parnara*, M (*guttatus*): *Chapra*, M (*mathias*): *Caltoris*,  
 Swin (*kumara*): *Milena*, Evans (*plebia*): *polytremis*, Mab (*con-*  
*tigua*).  
 98 (96c). Antennæ very short and apiculus minute.  
*Gegenes*, Hub (*nostradamus*). Africa and Europe—India. =  
*Philoodus*, Rambur (*lefebvrei*).  
 99 (96b). Palpi third joint porrect. Antennæ without apiculus.  
 F v2 nearer base than end cell: v4 mid 3 and 5. H v5 prominent  
 and bent down at origin.  
*Eogenes*, Mab (*alcides*). Asia Minor—India.

## Key to species. (of Asia to the limits of the Oriental Region).

I. 1. *Hasora*.—The Awls. (Plate 30).

Above brown, usually unmarked in the ♂: ♀ usually with pale  
 hyaline spots F. Below may be purple or green washed and may  
 have a prominent pale band H.

- 1a (11a). Unh no pale discal band.  
 1b (10). Unh not green.  
 1c (8a). ♂ upf no brand.  
 1 (2a). Unh not outwardly paler. Plain brown both sides: ♀  
 uph basal  $\frac{2}{3}$  clothed yellow hairs. H tornus rounded.  
*mus pahanga*, Evans. (45-50). Gunong Tahan, Pahang. Perak.  
 R. (*mus*, El and Ed, Borneo, has yellow cilia uph and a pale sub-  
 tornal spot unh).  
 2a (1). Unh outwardly paler. ♀ normally with pale yellow spots  
 in cell, 2, 3 and 1 to 3 apical dots.  
 2 (3a). Head, thorax and base clothed green hairs. H tornus  
 rounded. Unh only a single subtornal spot.  
*umbrina*, Mab. (55-60). Celebes. (= *habroa*, Swin).  
 3a (2). Head etc. brown.  
 3 (4a). Upf and unh tornus broadly yellow.



I. 1. Hasora.—The Awls. (Plate 30)—*contd.*

*myra*, Hew. (52). Java, Sumatra. R.

4a (3). Uph plain.

4b (6a). Unh no spot in cell: plain brown.

4 (5). Unf dorsum not paler outwardly. Top of clasp straight. *funehris*, nov. (55-60). Gunong Ijan and Jalehru, Malaya. VR.

5 (4). Unf dorsum prominently paler outwardly. Wings more produced. Top of clasp concave between two points.

*lizetta*, Pl. (55-60). Malaya, Sumatra, Nias, Java, Sumbawa. NR. (= *hadria*, DeN, Perak: *wortha*, Swin, Java: *tantra* and *avajra*, Fruh, Nias and Sumbawa: *lizetta* from Java).

6a (4b). Unh always a spot in cell.

6 (7). This spot a minute dot. Tornus H hardly produced. Below with a slaty glaze.

*anura*, DeN. (50-55). The Slate Awl. Mussoorie to S. Shan States. SW. and C. China. Siam. R.

7 (6). This spot prominent. Tornus H produced to a well defined lobe.

α. ♂ below dark ochreous, apex F and disc H broadly pale ochreous: in ♀ purple washed. ♂ upf no apical dots: ♀ with large yellow spots in cell, 2, 3 and apical dots in 6-8.

*badra lanka*, Evans. (50-55). The Common Awl. Ceylon. NR.

β. ♂ ♀ below purple washed and unf a black area beyond end cell. ♂ upf usually with apical dots.

\**badra badra*, M. S. India. Sikkim to Burma. Andamans. S. Nicobars. China. Formosa. Siam. Malayana. Palawan. NR. (= *godama*, *sankarya* and *madatta*, Fruh, Formosa, Engano and Java: *badra* from Bengal).

γ. Above more or less purple glossed. Below usually with a strong purple gloss. Unf no apical spots. Unh central spot very large and round, subtornal spot long, elongate. ♀ upf spots reduced, apical spots absent and often the cell spot also.

*badra quadripunctata*, Mab. Philippines. Celebes. Moluccas (= *quadrinaculata*, Auct. Described from the Moluccas. *gnæus*, Pl = *certhia*, Pl and *celebica*, Stg, are minor races from the Philippines and Celebes).

8a (1c). ♂ upf with a brand. Below with a strong violet gloss.

8 (9). ♂ upf with a discal stigma v1-4. Unh faint diffused spot in cell: subtornal spot yellow. ♀ very like *badra*.

*simplicissima lioneli*, Fruh. (45-55). The Simple Awl. Dawnas to S. Burma. Malayana (except Borneo). Palawan. R. (= *yanuna*, *tyrius* and *prabha*, Fruh, Nias, Java and Palawan: *lioneli*, from Sumatra).

β. Larger. ♀ at most one apical spot.

*simplicissima mixta*, Mab. Philippines. (= *philetas*, Pl: *cirta*, Fruh, Bazilan).

γ. More uniform, paler below. ♀ upf spots small, in 2 or 2 and 3 only.

*simplicissima fenestrata*, Mab. Philippines. (= *simplicissima*, Mab, Moluccas).

9 (8). ♂ upf with glandular streaks along vs. 1, 2, 3. Unh no spot in cell: subtornal spot white and prominent: very faint traces of a band. ♀ ?.



I. 1. Hasora.—The Awls. (Plate 30)—*contd.*

*leucospila parnia*, Fruh. (48-50). The Violet Awl. S. Burma, Nicobars (recorded), Malayana. Philippines. VR. (= *palinda*, Swin, Java: *matisca*, Fruh, Bazilan: *parnia* from Borneo: *leucospila*, Mab, from Celebes and occurs also on the Moluccas, is very similar).

10 (1b). Unh green. No ♂ brand. ♀ with white spots in 2 and 3 upf.

*salanga*, Pl. (55). The Green Awl. Dawnas—S. Burma. Nicobars (recorded). Malayana. (= *woolletti*, Riley, Borneo: *salanga* from Malacca).

11a (1a). Unh with a pale discal band.

11b (14a). ♂ no brand.

11 (12a). Unh brown. Upf basally clothed dull yellow hairs, tornally brighter. ♀ spots in cell, 2, 3 and apical dots.

*borneensis*, El and Ed. (60-65). Malaya. Borneo. VR.

12a (11). Unh with a purple blue or green glaze. ♀ with spots in 2 and 3.

12 (13). Upf no apical dots. Unf obscure pale discal band inwardly curved towards costa. Below suffused purple. Unh band broad, outwardly diffused, broken at v1b: base dark greenish blue.

*proxissima siamica*, nov. (50-55). S.E. Siam. VR. (*proxissima*, El and Ed, Mindoro, a much greener base unh and the band unbroken at v1b. The Bornean race, *siva*, nov, differs in having the band much narrower and the whole wing suffused a darker blue).

13 (12). Upf always a subapical dot and often a dot in 3 in the ♂. Unf the obscure discal band not curved in at the costa.

a. Unh base dull dark greenish blue: band broad  $2\frac{1}{2}$  mm and outwardly diffused.

*vitta indica*, nov. (45-55). The Plain Banded Awl. S. India. Sikkim to Dawnas. S.W. China. NR.

β. Unh base brighter green: band narrower  $1\frac{1}{2}$  mm and outwardly better defined.

*vitta vitta*, But. S. Burma. Malayana. Siam. Andamans. NR. (= *chabrona*, Pl, Malacca: *vitta* from Labuan).

γ. Unh discal band only just divided at v1b,  $2\frac{1}{2}$  mm wide and fairly well defined outwardly.

*vitta proximata*, Stg, Palawan. ? Philippines.

δ. Unh uniform chocolate, no basal green: band narrow, Imm, sharply defined.

*vitta sula*, nov. Sula Besi. ? Celebes.

14a (11b). ♂ with brand upf.

14 (15a). ♂ upf with glandular streaks along vs. 1, 2, 3. ♀ with spots in 2 and 3 and an apical dot. Unf pale postdiscal band straight. Below dark brown. Unh band white,  $1\frac{1}{2}$  mm, sharply defined. ♀ uph clothed greyish hairs.

*khoda coulteri*, WM. and DeN. (55-60). The Large Banded Awl. Cachar. VR. (*minsona*, Swin = *mimosa*, Auct, in error, Borneo, is the Malayana race, with the band unh tending to disappear. *khoda*, Mab, is from New Caledonia: *pathana*, Fruh and *mæstissima*, Mab = *burgeri*, Ribbe, are closely allied races from the Philippines and Celebes.

15a (14). ♂ upf with a discal stigma v1-4.

I. 1. *Hasora*.—The Awls. (Plate 30)—*contd.*

15b (17). Uph plain. Unh band white. Unf pale discal band curved inwards at costa. ♀ with discal spots in 2 and 3 and may be an apical dot.

15 (16). Unh discal band pure white and sharply defined.

a. Unh base dull indigo blue and discal band very broad. Unf apex and unh margin clothed ochreous scales.

*taminatus taminatus*, Hub. (45-55). The White-banded Awl. Ceylon. S. India. C. (= *chromus*, Auct, in error: *butleri*, Auri-vill).

β. Below no ochreous scaling and discal band narrower.

*taminatus bhavara*, Fruh. Sikkim—N. Burma. W. China. NR.

γ. Unh steely blue from base to the discal band, which is very narrow.

*taminatus almea*, Swin. S. Burma. S. Nicobars. Siam. Malaya. NR. (= *canostigma*, J and T Hainan and ? *padma*, Fruh, Palawan).

δ. Unh brilliant metallic green: band narrow. ♀ spots upf tend to be obsolete.

\**taminatus malayana*, Fd. Andamans. Car and C. Nicobars. (The Formosan race is *vairacana*, Fruh, with a purple unh, narrow sullied band and ochreous scaling as in *taminatus*).

η. Unh basal area brilliant green, beyond the band indigo shading to dark brown.

*taminatus attenuata*, Stg. Philippines. Celebes. (described from Celebes and = *meala*, Swin: *galaca*, Fruh a minor race from Bazilan and *acakra*, Fruh, from Sula Besi. Extends to the Moluccas).

16 (15). Unh discal band bluish or purple white, narrow, outwardly diffused: wing more or less glossed dull steely blue.

*alexis alexis*, F. (45-50). The Common Banded Awl. Ceylon. India. Baluchistan. Burma. S. Nicobars. China. Siam. Malaya. Palawan, Philippines. Celebes extending to the Australian region. NR. Andamans VR. (= *chromus*, Cr and *ambasa*; M, Java. *inermis*, El and Ed, is a large race from the Liu Kiu Islands, Japan, with very little steely gloss below).

17 (15b). Uph a broad yellow central band. ♂ ♀ with large yellow discal and apical spots. Unf apex purple washed. Unh yellow band.

\**schonherri schonherri*, Lat. (45-55). The Yellow-banded Awl. Assam—Burma. Siam. Malaya. (= *chuza*, Hew, Borneo: *criddatta*, Fruh, Nias. *schonherri* is from Java).

β. Upf only the apical spots hyaline. Uph yellow area to base.

*schonherri gentiana*, Fd. (50-60). Philippines. (= *saida*, Hew).

I. 2. *Ismene*.—The Awlets. (Plate 30).

Mostly unmarked dark brown above and striped below.

1a (5a). Unh no striping, veins not pale and no black spot base 8. *Ilusca* Group.

1 (2a). No ♂ brand. Cilia pale yellow uniform. F v3 nearer v2 than v4. Above brown, costa F yellow: ♀ discal row large pale spots upf and end cell. Below paler; unh plain.

I. 2. Ismene.—The Awlets. (Plate 30)—*contd.*

*aquilina*, Spey. (45-50). Japan. Askold. Vladivostock. R. (= *jankowskii*, Ob: *chrysaeglia*, But.).

2a (1). ♂ upf with brand. Cilia H orange and tornally elongate. F v3 nearer v4 than v2.

2 (3a). ♂ upf brand broad, edges zigzag, consisting of streaks above v1, either side v2 and below v3. H tibiae swollen. Above brown, bases broadly dark orange: upf white spots in 2 and 3, which may be absent in ♂. Below slatey brown.

\* *mahintha*, M. (40-45). The Slate Awlet. Assam—Burma. NR.

3a (2). ♂ brand regular and continuous from v1-3. H tibiae not swollen.

3 (4). ♂ brand narrow 1 mm. Above dark brown with obscure purple wash, bases dull orange. Unh dull brown with a more or less prominent purple white discal band, extending to unf.

*nestor*, Mösch. (45-50). Java. Sumbawa. Lombok. Timor. Flores. Wetter. (= *firdusi*, Pl, Java: *ionis*, DeN, Sumbawa: *atrilotata* ♂, *rubrocincta*, ♀, Mab, Timor: *antigone*, Rob, Flores: *zonaras*, Fruh, Wetter).

4 (3). ♂ brand broad 3 mm. Above brown. Below paler, obscure diffused pale discal band.

*ilusca*, Hew. (40-45). Celebes.

5a (1a). Unh more or less striped and a prominent black spot base 8.

Ædipodea Group.

5b (14a). Unf apex never green striped to termen.

5c (11a). ♂ F v3 bent down at origin, nearer to v2 than to v4. Upf with costal orange streak. H cilia orange.

5d (9a). ♂ upf with brand.

5e (8). ♂ brand compact, basal, from base under cell to midwing, v1-3.

5 (6a). H tornus broadly orange. Below chocolate with blue suffused discal areas.

*phul*, Mab. (50-60). Philippines. Celebes. (= *tolo*, Plotz, both from Philippines. ♀ = *lusca*, Swin, described from Celebes.

6a (5). Uph cilia only orange.

6 (7). Below with ochreous discal areas and orange suffusion about dorsum H.

α. ♂ H v8 somewhat distorted and costa white, v6 bowed. Unh more or less orange striped. No blue hairs on thorax above.

*ædipodea ataphus* Watson. (40-50). The Branded Orange Awlet. Ceylon. NR.

β. ♂ H v8 not distorted, v6 slightly bowed. Unh dorsum more orange. Blue hairs on thorax above.

*ædipodea ægina*, Pl. Mussoorie to N. Burma. S. W. China. Hong Kong. Siam. Hainan. (= *athena*, Fruh, Tonkin).

γ. ♂ H v8 distorted and apex of wing folded over, v6 acutely bowed towards v4. Above prominent blue hairs on thorax and in cell uph.

*ædipodea ædipodea*, Swain. Probably S. Burma. Peninsular Siam. Malayana. Philippines. (= *belesis*, Mab and *consobrina*, Pl, Java).

I. 2. Ismene.—The Awlets. (Plate 30)—*contd.*

δ. Large. H v8 rather less distorted. Above with dark green hairs on the thorax and at bases.  
*ædipodea excellens*, Hopff. (65-70). Celebes. Sula Is. (= *ædipus*, El and Ed, Sula).

7 (6). Below brown, faintly purple glossed: unf pale purple-white discal area: unh purple white streaks between veins.

*tuckeri*, El and Ed. (60.) Tucker's Awlet. Tavoy. Malaya. VR.

8 (5e). ♂ brand central from mid v1 to base v4, variable and may be divided into spots: rather obscure. Above ♂ plain, ♀ bluish hairs on thorax.

a. Brand restricted to 2 patches. Above ♂ upf prominent basal costal orange streak. Below narrow orange striping, more intense mid disc and beyond cells.

*jaina fergussoni*, DeN. (60-70). The Orange Awlet. S. India to N. Kanara. NR.

β. As last but unf prominent white spot in cell and a series of dull purple-white spots 4-8, more obscure in ♂.

*jaina jaina*, M. Mussoorie to Sikkim. NR.

γ. ♂ brand a square patch v1-3. Larger and darker.

\* *jaina vasundhara*, Fruh. Assam to Karens. NR.

δ. ♂ brand more extensive. Unf spots more obscure. Upf orange costal streak more prominent. Unh striping purple rather than orange.

*jaina margana*, Fruh. Dawnas. Siam. R.

η. ♂ upf only faint trace of a brand below v2, whose origin is mid vs 1 and 3. Below as *jaina*, but no spot in cell F and unh streaks faint.

*jaina astigmata*, nov. S. Andaman. VR. (*formosana*, Fruh is the smaller and darker Formosan race).

9a (5d). ♂ upf no brand. Below pale purple white streaks.

9 (10). ♂ upf basal area below cell clothed dense hairs.

*velva*, nov. (60). Perak. Borneo. VR.

10 (9). ♂ upf normal. Above rather pale brown, faintly purple washed. Unh some orange striping about dorsum. Palpi grey.

*anadi*, DeN. (50-55). The Plain Orange Awlet. Mussoorie to Karens. Siam. R.

11a (5c). ♂ F v3 nearer v4 than 2 as in all ♀♀.

11b (13). F v4 much nearer v5 than 3, which is opposite v11.

11 (12). ♂ above rather pale brown: ♀ broadly blue at bases. Below very prominent orange striping and large orange patches beyond cells and at base H.

*etelka*, Hew. (65-75). The Great Orange Awlet. Karens to S. Burma, Sumatra, Borneo. R.

12 (11). ♂ above paler, thorax and bases iridescent bluish green: ♀ all dark steely blue. Below brilliant dark blue, broad blue-white streaks before end cells and between veins.

*imperialis*, Plotz. (80-85). Celebes. (= *castnioides*, Vander Bergh).

13 (11b). F v4 mid vs 5 and 3, which is opposite v10. ♂ above rather pale brown, lighter below v3 F and costal streak obscure. Upf costa to v7 white, extending in centre of space 6 to v6. ♀ dark brown, bases and thorax clothed blue hairs. Below evenly orange striped with streaky orange patches beyond cells.

I. 2. *Ismene*.—The Awlets. (Plate 30)—*contd.*

*harisa harisa*, M. (45-55). The Orange Awlet. Sikkim to S. Burma. NR. Recorded from Andamans. (Slightly differentiated races are—*purpurea*, Riley and Godfrey, E. Siam, *asambhara*, Fruh, Tonkin, *moncada*, Fruh=*distanti*, Swin MS, Malaya, *niasana*, Swin, Nias, *crinatha*, Fruh, Java, Sumatra, Borneo, *mangolina*, nov, is a darker race, ♀ shining dark blue: below dark blue with pale green instead of orange streaks: from Sula—Mangoli.).

14a (5b). Unf apex green striped to termen.

Vasutana Group.

14b (16a). H cilia orange. Below green with narrow black stripes between each vein and veins black.

14 (15). ♂ upf prominent separate brands along vs 1, 2, mv and 3: v3 close to v2. Above dark brown, clothed yellow hairs. Unf no spots.

*striata*, Hew. (55-65). W. China. R. (= *septentrionis*, Fd).

15 (14). ♂ upf no brand and v3 near v4. Above dark brown: ♂ uph clothed orange hairs: ♀ base and thorax clothed blue hairs. Unf small white spots in 2 and 3.

*vasutana*, M. (55-65). The Green Awlet. Kumaon to N. Burma. NR. (= *rahita*, Fruh, Assam).

16a (14b). H cilia whitish grey. Below black, veins green and a green stripe between each vein.

16 (17). ♂ upf rather obscure brands along vs 1. 2. 3: v3 near v2. Above dark brown, prominent costal orange streak F, obscure in ♀. Below uniform, stripes bluish green.

*amara*, M. (45-55). The Small Green Awlet. Sikkim to S. Shan States. R. Andamans. VR. (= *pindapatra*, Fruh, Assam).

17 (16). ♂ upf no brand and v3 close to v4. ♂ above rather pale brown with pale yellowish streaks between veins and uph costa broadly pale as in *harisa*. ♀ purple brown, base F and nearly all H green. Below paler, striped pale green: unh broad whitish streak from base through cell to termen.

a. ♂ above pale striping more developed. ♀ upf pale diffuse spots in 2 and 3. Smaller.

*gomata kanara*, Evans. (50-55). The Pale Green Awlet. S. India to N. Kanara. R.

β. Larger and darker.

\* *gomata gomata*, M. (60-65). Sikkim to Assam. NR. (*lara*, Leech, is a larger, paler, race from W. China. *lalita*, Fruh., Sumatra=*vajra*, Fruh, Java, is a larger and darker race from Malaya. *lorquinii*, Mab, Luzon is a paler race from the Philippines and Celebes=*radiosa*, Pl, Celebes and *mindorana*, Fruh, Mindoro).

I. 3. *Bibasis*.—The Orange-tail Awl. (Plate 30).

Above unmarked. Cilia H and end abdomen orange. Unf large white central patch above mid dorsum.

a. Unh discal white band broad and outwardly diffused.



I. 3. Bibasis.—The Orange-tail Awl. (Plate 30)—*contd.*

*sena sena*, M. (45-50). Ceylon, S. India, Mussoorie to Karens, Siam, Hainan. R. Andamans. VR.

$\beta$ . Unh white of variable width, but outwardly sharply defined.

*sena uniformis*, El and Ed. Dawnas to S. Burma, Malayana. NR. (= ? *pulawana*, Stg, Palawan and *vaicravana*, Fruh, Luzon).

$\gamma$ . ♀ above with the bases broadly dark orange. Unh discal band narrow in ♂, outwardly diffused in ♀.

*sena sumbawana*, El and Ed. Sumbawa. Lombok.

## I. 4. Choaspes.—The Awlkings. (Plate 30).

Above bluish purple brown more or less overlaid basally with dark greenish hairs, bluish in ♀. Below green with narrow black veins. H tornus and cilia orange. Species are difficult to distinguish except by examining the clasp of the genitalia, the outer lobe of which differs as indicated in the key.

1 (2a). ♂ with glandular streaks: upf along either side of mid vs 1, 2, basal  $\frac{1}{2}$  of v3 and below basal  $\frac{1}{2}$  of v4: uph along either side of basal  $\frac{1}{2}$  of vs 3, 4 and above centre of v2. ♂ above basally dark iridescent green, rest dark indigo: ♀ paler and brighter. Below veins prominently black. Clasp lobe broadly rectangular, inner edge serrate.

$\alpha$ . H tornal area orange. Unh orange area occupies  $\frac{1}{4}$  wing, extending from  $\frac{1}{4}$  along dorsum to  $\frac{1}{4}$  from base along v3: along v1b there is a broad black tongue from the edge of the green area to just beyond the middle of the orange area: beyond the orange area is inwardly bordered by a double black spot in 1b and a single spot in 2 and there are exactly similar spots in the middle of the orange area. Uph orange area narrow from dorsum to mid 1a and then narrowly and evenly along the termen to v3.

*stigmata stigmata*, nov. (54-60). The Branded Awlking. Sikkim to N. Burma. Hainan. NR.

$\beta$ . H toral area yellow: tornus much produced. Uph yellow area decreasing to v3.

*stigmata caudata*, nov. S. Burma, Malaya, Sumatra, Borneo, Banka. NR.

$\gamma$ . As last but tornus more produced. Unh tornal yellow area occupies  $\frac{1}{3}$  wing extending to v4, tongue along v1b absent; spots present and an additional single spot on inner edge and middle of yellow area 3. Uph tornal yellow area wider to v2 but the double black spot from below in mid 1b shows as a tongue from the dark area.

*stigmata extensa*, nov. Java.

2a (1). ♂ with no glandular streaks.

2b (6). Unh tornal orange area not above v3: below veins finely black.

2c (4.5). ♂ above uniform dark olive green, bases iridescent: ♀ as in last.

2 (3). H tornal area orange as is 1a. Clasp lobe broadly rectangular, tip rounded and turned over, no serration.



I. 4. *Chaospes*.—The Awlkings. (Plate 30)—*contd.*

*similis*, *nov.* (50-55). The Similar Awlking. Sikkim, Assam, W. China. R.

3 (2). H ternal area yellow and tornus produced. Paler and often bluish green. Clasp lobe circular, connected by a narrow neck, thin and transparent.

*a.* Tornus as  $1\beta$ : uph yellow area much more restricted as in 1*a*.

*subcaudata crawfurdi*, Dist. (54-60). The Caudate Awlking. S. Burma, Malaya, Sumatra, Borneo. R.

$\beta$ . Unh tornus as  $1\gamma$ , but yellow area not beyond  $v3$  and no spot in 3. Uph as  $1\gamma$ , but yellow more extensive and spot in 2 shows also.

*subcaudata subcaudata*, Fd. Java.

4 (2c.5).  $\delta$  above dark shining indigo blue, turning green in old specimens.  $\phi$  dark shining green bases iridescent. The clasp lobe like a bird's head in profile with the beak inwards, the beak high up in *a*, lower down in  $\beta$  and lower still in  $\gamma$ , the inner edge above the beak being serrate in  $\gamma$ .

*a.* H ternal area orange as in 1*a*. Unh black tongue into orange area narrow.

*benjaminii benjaminii*, Guer. (50-60). The Indian Awlking. Ceylon, S. India. NR.

$\beta$ . Unh the tongue broad. Above bases paler.

\* *benjaminii xanthropogon*, Koll. Kulu to Karens, China, Siam. NR. (*japonica*, Mur, Japan is more uniform above and *formosana*, Fruh, Formosa is said to be intermediate).

$\gamma$ . H ternal area yellow, unh as  $1\beta$ . Uph yellow area very extensive straight across to termen at  $v2$ , unmarked.

*benjaminii pallida*, *nov.* Sumatra.

5 (2c.4).  $\delta$  upf basal  $\frac{1}{2}$  (uph  $\frac{2}{3}$ ) dark olive green, outer part dark brown washed indigo:  $\phi$  as No. 2. H ternal area as No. 1*a*. Clasp lobe very narrow, the end turned outwards, hook-like.

*plateni furcata*, *nov.* (50-55). The Hooked Awlking. Sikkim, Manipur. R. (I have a  $\delta$  from Palawan which is identical, but smaller 46 mm: this may be *adhara*, Fruh, Mindanao, which is said to be a race of *plateni*, Stg=*renidens*, Mab, Celebes).

6 (2b). Unh ternal orange area to  $v5$ : below veins broadly black. Uph ternal orange area to  $v3$  at least.

*sargon*, Mab. (60-62). Celebes. (extending to Moluccas and New Guinea).

I. 5. *Badamia*.—The Brown Awl. (Plate 30).

Above dark brown, bases prominently paler. Upf  $\delta$  with whitish hyaline spots in cell, 2 and 3; in  $\phi$  spots are larger, spot in 2 is conjoined to cell spot and there is a small spot in 1*b* against  $v1$ . Below pale brown, tornus H dark brown, crowned by a whitish spot.

\* *exclamationis*. Fab. (50-55). All India and China to Australia. Ceylon, C. Andamans R. (= *ericus* F; *thymbron*, Fd; *ladon*, Cr; *forulus* Hub).

**I. 6. Orthopætus.—The Dawnflies.** (Referring to their habit of flying at dawn.) (Plate 30).

Large ferruginous brown insects. Upf prominent white hyaline spots in cell, 2 and 3 and more or less prominent apical spots. Uph a discal row of dark spots.

1 (2). Uph discal spots large, black, yellow ringed. Above fulvous brown. ♂ upf with a costal fold.

*lidderdali*, El and Ed (65). Lidderdale's Dawnfly. Bhutan. VR. (? unique).

2 (1). Uph discal spots small and a dark spot end cell; in ♀ some of the spots may be hyaline white. Upf apical spots obscure and dark in the ♂; prominent and hyaline in ♀.

a. ♂ with costal fold upf. ♂ above rich dark fulvous brown: ♀ brown.

*phanæus lalita*, Doh. (60-65). The fulvous Dawnfly. Lushai, Assam to N. Burma. R.

β. ♂ above fulvous brown: ♀ ferruginous brown.

\* *phanæus fulva*, nov. Burma, Siam. R.

γ. ♂ no costal fold. Above rich dark fulvous brown.

*phanæus*, Hew. (60-65). Malay Peninsular, Sumatra, Borneo and very probably S. Burma. R.

**I. 7. Capila.—The Striped Dawnflies.** (Plate 30).

Large dark brown insects, more or less striped in the ♂ and with a white band upf in ♀ usually

1 (2a). Upf prominent hyaline white spots in cell, 2 and 3; small spot in 1b just below spot in 2; prominent apical spots in 6-8. Above olive brown. Uph obscure black veins and spots in 2 and 3. H square, angled at apex and v3.

*omeia*, Leech. (60). W. China. R.

2a (1). Upf at most a single spot in ♂ and ♀ with a continuous hyaline white band; no apical spots.

2 (3a). ♂ upf single large hyaline white spot end cell; bases and thorax fulvous; apex F produced and outer margin straight. ♀ upf an irregular white band from mid costa to tornus, as in *sennara*, but inner edge of spot in 2 very irregular and reaches to inner edge of spot in 3; purple basal suffusion. Antennæ longer than usual.

\**hainana*, Crowley. (70). The Spot Dawnfly. N. Shan States to Karens, S. E. Siam, Hainan. VR. (= *mackwoodi*, Evans, Burma: *barroni*, Riley and Godfrey, Siam).

3a (2). ♂ upf no hyaline spot.

3a (5). ♂ above uniform dark brown, with prominent pale stripes between veins.

3 (4). ♂ above uniform, rather pale brown, head, etc., dark brown; termen convex. ♀ upf discal band very irregular; uph no pale stripes.

*sennara*, M. (65-80). The Pale Striped Dawnfly. Sikkim. VR.

4 (3). ♂ above base, head and thorax orange. ♀ upf central white band regular with parallel edges; uph dull pale stripes outwardly. ♂ apex F produced and margin straight.

I. 7. *Capila*.—The Striped Dawnflies. (Plate 30)—*contd.*

\* *jayadeva*, M. (65-75). The Striped Dawnfly. Sikkim to Assam. R.

♂ (3a). ♂ above olive brown, discs broadly pale with black veins; margin and base broadly dark. ♀ as last but band upf more irregular.

*translucida*, Leech. (68). VR. W. China. (= *pussa*, Hering).

I. 8. *Crossiura*.—The Fringed Dawnfly. (Plate 30).

♂ ♀ above very dark brown; upf shining white hyaline band from scv across cell to 1b with small spot beyond; in ♀ band is continuous from costa to dorsum at tornus; 5 small apical spots from 4-8. Uph in ♀ a discal series of small dark spots, with diffuse fulvous rings.

*pennicillatum*, DeN. (60-70). Khasi Hills. VR. (races—*kiyila*, Fruh, C. China—*insularis*, Joicey and Talbot, Hainan).

I. 9. *Calliana*.—The White Dawnfly. (Plate 30).

♂ above white; upf with broad dark brown apex and dark marginal spots in 2 and 3; uph with one or more black discal spots showing from below. Unf basal  $\frac{2}{3}$  cell and costa dark brown and a similar patch beyond cell; apex as above but dark brown to tornus; unh a discal series of large black spots, also a spot end cell and at bases 1c and 8. ♀ quite different; above dark brown with upf a very large hyaline white spot end cell, continued as a non-hyaline spot to the costa; also large hyaline discal spots in 2 and 3; uph with small black discal spots; unh black spots as in ♂.

\* *pieridoides*, M. (60-70). Assam. Dawnas. R. (race *adamsi*, Evans; larger, more heavily marked and the cell upf black dusted, Borneo—3 ♂, in Adams collection, B.M.—1 ♂ Selangor Pahang border, 'The Gap.' Race *chinensis*, nov, W. China: wings more pointed, markings reduced).

I. 10. *Charmion*.—The Velvet Flat. (Plate 30).

♂ above velvet black; ♀ browner. Upf broad white hyaline band with bluish reflections from v2 to scv; at end cell in ♂ band is constricted at upper end, in ♀ even, but nicked at v4. Palpi brown below, orange at sides. Antennæ plain black.

\* *ficulnea ficulnea*, Hew. (45-50). S. Burma, Malay Peninsular, Siam, Sumatra, Borneo. NR. (= *signata*, Druce; *leucographa*, Pl; *queda*, Pl. *niasica*, Mab, Nias, has no cell spot upf or only a detached dot: occurs as a variety, *ovalis*, Mab, on Sumatra = *nibana*, Fruh).

β. Upf band extends into 1b.

*ficulnea tola*, Hew, Celebes. (= *zurui*, Pl and *pleisoneura*, Stg).

I. 11. *Celænorhynchus*.—The Flats. (Plate 30).

Above dark brown. Upf with a hyaline white or yellow discal band from scv at end cell to at least v2, composed of conjoined or detached spots; also usually 5 apical spots in 4-8. Uph and unh often with non-hyaline yellow spots. (♂ of *spilothyrus* is aberrant, having no discal markings upf).

1a (25a). Upf discal spots or band white or very pale yellow.

1b (21a). Upf discal spot in 3 never reaches base 3 nor is completely conjoined to spots in cell and 2.

Leucocera Group.

1c (3a). Upf discal spots in 2, 3 and cell not overlapping, widely separated: spot in 3 mid 2-4 and spot in 2 mid 3 and cell.

1 (2). Upf base widely ochreous brown: in 1b obscure central spot and 2 contiguous white discal spots. Unh orange with large brown spots. Antennæ shaft white above in ♂.

*flavocincta*, DeN. (70). The Bhutan Flat. VR.

2 (1). Upf uniform dark brown: in 1b large white central spot and 2 separate discal spots. Uph and unh dark brown with prominent yellow spots. Antennæ shaft pale brown.

*aspersa*, Leech. (60). The Large Streaked Flat. Nagas. Chia—Kou—Ho, China. VR. (= *clitus*, DeN, Nagas).

3a (1c). Upf discal spots in 2, 3 and cell close and usually overlapping: spot in 3 remote from spot in 4.

3b (6a). Unf 4 outer spots in 1b. Antennæ white banded below club. Uph spots small.

3c (5). Upf and unf prominent spot in 1b before middle. Cilia F chequered.

3 (4). Uph basal spots and spot end cell obscure and dusky; discal spots small and usually prominent. Upf cell spot continued to costa.

*ambareesa*, M. (45-55). The Malabar Flat. S. India—Bengal. NR. (= *hiera*, Pl, MS).

4 (3). Uph spot end cell large and prominent, other spots small. Upf cell spot not continued to costa.

*consanguinea*, Leech. (43-47). W. China. R. (race *ratna*, Fruh, Formosa).

5 (3c). Upf there may be a minute spot before middle in 1b, but it is not reproduced unf. Uph spot end cell and discal spots prominent.

*pyrrha*, DeN. (45-55). The double spotted flat. Bhutan and Kumaon to N. Burma. NR.

6a (3b). Unf only 2 or fewer outer spots in 1b.

6b (11a). Upf prominent spot before the middle in 1b.

6 (7a). Upf central spot in 1b white and 2 prominent discal white spots in 1b. Unh yellow basal streaks between veins. Apex F rounded. Antennæ white banded below club.

*maculosa*, Fd. (45-50). C. and W. China. Szechuan. C.

7a (6). Upf central and lower discal spot in 1b yellow, if present. Unh no yellow basal streaks.

7 (8a). Uph and unh sub-marginal markings conjoined and veins therefrom to termen yellow. Antennæ brown.

*kiku*, Hering. (42). Tsha—Jiu—San, China. VR.

I. 11. *Celænorrhinus*.—The Flats. (Plate 30)—*contd.*

8a (7). Uph and unh sub-marginal spot separate, veins not yellow.

8b (10). Antennæ white banded below club. Uph cilia chequered, spots prominent.

8 (9). Upf central and lower discal spot in 1b small and rounded. Palpi yellow and brown below. Apex F produced. Apex of tegumen undivided, but surmounted by 2 long curved spines; clasp undivided.

*\*pulumaya*, M. (45-50). The Multi-spotted Flat. Kangra to Nagas. W. China. NR. (= *pila*, Tytler. Race *clio*, Mab, Formosa).

9 (8). Upf central and lower discal spot in 1b large, yellow, irregular, as large as the upper discal spot in 1b. Palpi yellow below. Apex F rounded, termen convex. Tegumen divided at apex into 2 broad points, no spines: clasp divided.

*tytleri*, Evans. (45-50). Tytler's Multi-spotted Flat. Mussoorie to Manipur. R.

10 (8b). Antennæ white in ♂. Cilia H unchequered, pale yellow. Uph spots small and few.

a. Smaller.

*pero pero*, DeN. (50-55). The Mussoorie Spotted Flat. Mussoorie to Sikkim. R.

β. Larger.

*pero lucifera*, Leech. (60-65). Nagas. N. Burma. W. China. R.

11a (6b). Upf no spot in 1b before the middle (except sometimes in *munda*).

11b (15a). Upf spots in 4, 5 always prominent and equal to spots in 6-8. Uph prominent yellow spots and cilia yellow, chequered at ends of veins.

11c (13a). Antennæ white above in the ♂. Upf central discal spot in 2 opposite origin v3.

11 (12). Unf cell spot not to costa. Upf one or two spots in 1b, spot in 3 small or absent.

*\*patula*, DeN. (55-65). The Large Spotted Flat. Bhutan. Sikkim to Nagas. R.

12 (11). Unf cell spot to costa as usual. Uph spots reduced to spot end cell and sub-marginal row. Unh no basal spots. Upf single spot in 1b.

*sumitra*, M. (60-65). Moore's spotted Flat. Sikkim to Assam. VR.

13a (11c). Antennæ not white above. Upf discal spot in 2 with inner edge opposite or beyond origin v3.

13 (14). Antennæ plain or faintly chequered, white banded below club. Upf spots large, two spots in 1b. End clasp deeply incised. *plagifera*, DeN. (50-60). DeNiceville's Spotted Flat. Sikkim to

I. 11. *Celænorrhinus*.—The Flats. (Plate 30)—*contd.*

*moelleri*, nov. (52). Moeller's Spotted Flat. Sikkim. VR.

15a (11b). Upf spots in 4, 5 usually absent or smaller than spots in 6-8. Uph yellow spotting usually absent or rather obscure.

15b (19a). Upf spot in 2 with inner edge behind origin v3.

15c (17a). Antennæ shaft plain, white in ♂, brown with white club in ♀. Upf cell spot usually not continued to costa.

15 (16). Apex F produced and termen=dorsum. Upf inner edge spot in 2 never behind centre of cell spot: spot in 1b if present beyond spot in 2. H cilia broadly yellow, brown at end veins. Unf cell spot not prominently continued to costa.

a. Uph clothed dark dull yellow hairs.

*entellus simula*, Hew. (55-60). Sumatra.

β. Uph plain.

*entellus entellus*, Hew. Java. (= *angustipennis*, El and Ed: *binotatus*, Fruh).

16 (15). Apex F not produced and dorsum longer than termen. Upf inner edge of spot in 2 always behind centre of cell spot: spot in 1b usually under outer edge of spot in 2.

a. Uph yellow spots prominent: cilia bright yellow.

*leucocera chinensis*, Swin. (45-55). The Common Spotted Flat. Mishmi Hills. W. China. (= *sumitra*, Leech nec Moore).

β. Uph postdiscal spots usually obscure: cilia chequered brown and pale yellow. Upf spot in 3 quadrate, linear or absent: 1 or 2 spots in 1b: cell spot may or may not be prolonged to costa. Very variable, but local races cannot be defined for India.

*leucocera leucocera*, Koll. S. India to Bengal. Murree to Burma. Siam. Malaya. Andamans. C. (= *putra*, M: *leucocirca*, El).

γ. Upf spot in 3 nearly always absent. Uph plain: cilia unchequered.

*leucocera brahmaputra*, El and Ed. Borneo. Sumatra.

δ. Similar but smaller. Upf inner edges spots in 2 and cell in line.

*leucocera parva*, nov. Java. Bali.

17a (15c). Antennæ shaft prominently chequered, club white. Uph plain: cilia pale yellow or white, prominently chequered. Upf cell spot to costa.

17 (18). Upf spot in 3 conjoined to spots in 2 and cell, and quite or nearly reaching base 3. Tegumen ends divergent.

*munda*, M. (45-50). The Himalayan Spotted Flat. Murree—Sikkim. S. Shan States. R.

18 (17). Upf spot in 3 quite separate: apical spots separate. Unh small yellow spots. Tegumen ends parallel.

*maculicornis*, El. and Ed. (45-50). Elwes' Spotted Flat. Assam, Manipur. R. (= *vitruvius*, Fruh, Siam: *formosanus*, Fruh, Formosa: *arminia*, Pl, Ms.).

19a (15b). Upf spot in 2 with inner edge opposite origin v3.

19 (20). ♂ abnormal, unmarked black except upf golden apical spots 6, 7, 8 and upper spot near end cell with costal dot above it, but spots may be absent. ♀ normal: upf 2 spots in 1b. Antennæ plain, ochreous under club. Cilia H plain, dark brown.

*spilothyrus*, Fd. (40-50). The Black Flat. Ceylon. C. (= *infernus*, Fd).



I. 11. *Celænorhinus*.—The Flats. (Plate 30)—*contd.*

20 (19). ♂ normal. Upf 1 or no spot in 1b. Antennæ chequered, club white. H cilia chequered.

a. Above more or less clothed dull dark yellow hairs, leaving on uph large dark spot end cell and obscure discal row.

*ruficornis area*, Pl. (45-50). The Tamil Spotted Flat. S. India to Bengal. NR. (= *fusca*, Hamp.).

β. Uniform. Upf 2 spots or conjoined dashes on costa, above and separate from cell spot: usually spots in 4, 5.

*ruficornis ruficornis*, Mab. Java. (= *piepersi*, Fruh).

γ. Upf no spot in 4 or 5, cell spot continued to costa, spots larger.

*ruficornis celebica*, nov. Celebes.

21a (1b). Upf discal spot in 3 completely conjoined to spots in cell and 2 forming a compact band.

Tibetana Group.

21 (22a). Upf discal band does not extend into 1b and only in ♀ to costa; rarely a spot in 4 and never in 5. Uph obscure large dark spots in ♂. Unf diffused tornal patch. Unh plain. Cilia and antennæ plain, dark.

a. ♂ unf very narrow costal spot over cell spot; paler. ♀ pale brown and upf cell spot extends to costa.

*asmara concertus*, DeN. (35-45). The White-banded Flat. Assam to Karens. NR.

β. Similar but apex F produced.

*asmara cacus*, DeN. Rangoon. NR.

γ. ♂ unf costal spot prolonged full width to costa. ♀ upf cell spot not extended to costa. Darker.

\**asmara asmara*, But. S. Burma, Malay Peninsular, Borneo. NR. (Races of rather doubtful value are—*goto*, Mab, 'Japan' or more probably Liu Kiu Islands or S. China—*aditta*, Fruh, Siam—*ayata*, Fruh, Sumatra,—*milinda*, Fruh, Java—*palajava*, Stg, Philippines).

22a (21). Upf discal band always extending into 1b.

22 (23a). Upf discal band not extending to costa above cell; narrow, reaches v1; apical spots 4, 5, 6-8 prominent. H cilia uniform yellow white. Unf no subtornal pale patch. Unh yellow bar end cell. Antennæ white banded below club.

*badia*, Hew. (55-60). The Scarce Banded Flat. Sikkim to Assam. VR.

23a (22). Upf discal band extending to costa. Antennæ club whitish below. H cilia always more or less chequered white and brown, especially at apex.

23 (24). Upf discal band pale yellow and extended to v1; usually spots in 4 and 5. Unf no subtornal pale patch. Unh unmarked.

*tibetana*, Mab. (45-55). The Thibet Flat. W. China. Mishmi Hills. Mt. Victoria, S. Chin Hills. R. (Race *latifascia*, Mab, Yunnan, band slightly wider).

24 (23). Upf discal band white, not reaching v1, only a small upper spot in 1b against outer edge of spot in 2; lower apical spot in 6 out of line, detached and nearer termen. Unf prominent subtornal pale patch. Unh obscure small pale yellow spots.

a. Upf discal band narrow, spot in 3 projects beyond band.

1. 11. *Celænorrhinus*.—The Flats. (Plate 30)—*contd.*

*nigricans nigricans*, DeN. (40-45). The Small-banded Flat. Sikkim to S. Burma. Malay Peninsula. W. Siam. NR.

β. Upf discal band very wide, spot in 3 not projecting. H cilia with only traces of white about apex. Darker.

*nigricans balukinus*, El and Ed Borneo. (= *anoma*, Fruh; *orbiferus*, El and Ed, apparently an aberration towards *nigricans*).

25a (1a). Upf discal band bright yellow or orange. Antennæ more or less ochreous below club. (*snelleni* ♀ has white spots).

Dhanada Group.

25b (32a). Upf discal spot in 1b entirely hyaline.

25c (29a). Upf discal spot in 3 projects beyond spot in 2 and spot in 2 well beyond spot in 1b: often dots in 4, 5.

25d (27a). Upf discal spot in 3 separated at least by dark veins from spots in 2 and cell, not reaching base 3.

25 (26). Upf discal spot in 2 with its inner edge behind the central cell spot.

*saturatus*, El and Ed. (45-50). Java. Bali.

26 (25). Upf discal spot in 2 with its inner edge not behind the centre of the cell spot. ♀ spots white. Upf spots in 4, 5 and upper dot in 1.

*snelleni sema*, Evans. (45). Java. (*snelleni*, Fruh, Celebes, often lacks the spots in 4, 5 and 1b and the spot in 3 may reach base 3).

27a (25d). Upf discal spot in 3 completely conjoined to spots in cell and 2.

27 (28). Unh yellow spotted. Upf often dots in 4, 5.

*dentatus*, El and Ed. (40-45). Kina Balu, Borneo. VR.

28 (27). Unh plain.

*zea*, Swin. (40-45). Swinhoe's Flat. Sikkim to Assam. R.

29a (25c). Upf outer edges of spots in 1b, 2, 3, more or less in line.

29 (30, 31). Upf spot in 1b directed to dorsum well behind tornus.

*dhanada*, M. (40-45). The Himalayan Yellow-banded Flat. Mussoorie to Sikkim. R.

30 (29, 31). Upf spot in 1b directed exactly to tornus: often dots in 4, 5.

*andamanica*, WM and DeN. (35-40). The Andaman Yellow-banded Flat. Andamans. VR.

31 (29, 30). Upf spot in 1b directed to termen above tornus: apical spots may be absent.

*inequalis*, El and Ed. (40-45). Malaya, Java, Borneo.

32a (25b). Upf discal spot in 1b partly or entirely opaque.

32 (33a). Upf upper part of spot in 1b hyaline: with apical spots in 6-8 and rarely dots in 4, 5. H cilia more or less chequered especially at apex.

*affinis*, El and Ed. (40-45). The Burmese Yellow-banded Flat. Assam to S. Burma. NR.

33a (32). Upf spot in 1b entirely opaque.

33b (35). Upf discal band not occupying half space 3.

33 (34). Upf a yellow sub-marginal suffused spot in 1b beyond the discal spot, which is directed to the dorsum before the tornus.

I. 11. *Celænorhinius*.—The Flats. (Plate 30)—*contd.*

*lativittus*, El and Ed. (40-45). Sumatra, Java, Borneo. R.

34 (33). Upf no sub-marginal spot in 1b : discal spot in 1b directed to termen.

a. Upf discal band paler than spot in 1b : apical spots prominent, conjoined.

\**aurivittata aurivittata*, M. (40-45). The Dark Yellow-banded Flat. Assam to S. Burma. NR.

β. Upf discal band as dark as spot in 1b : apical spots minute, conjoined.

*aurivittata cameroni*, Dist. (35-40). S. Mergui. Malaya. R.

γ. Similar, but apical spots usually absent.

*aurivittata mahaca*, Fruh. (40-45). Sumatra. (= *sumatranus*, Mab and Bouillet : ? *vimana*, Fruh, Kina Balu, said to have band broader).

35 (33b). Upf discal band very broad and occupying well over half of space 3 : apical spots absent.

*ladana*, But. (45-50). Malaya. Borneo. R.

I. 12. *Achalarus*.—The Marbled Flats. (Plate 30).

Above dark brown with white or yellow hyaline discal spots upf in 1b, 2, 3, end cell and costa ; apical spots in 4, 5, 6-8. Unf apex and all unh grey powdered in patches, leaving more or less obscure irregular large dark spots.

1a (3a). Upf hyaline spot in 3 touching spot in 2.

1 (2). Palpi black below. Antennæ and cilia not chequered. Upf apical spots 6-8 coalesced.

*simplex*, Leech. (46). W. China. (= *gener*, Ob).

2 (1). Palpi grey below.

a. Paler brown. Apex F less produced and termen convex. Spots white.

*bifasciatus casyapa*, M. (45-55). The Marbled Flat. Kashmir to Kumaon. R.

β. Darker. Upf band much broader and yellowish.

\**bifasciatus liliana*, Atk. Assam to Karens. Yunnan. C.

γ. Still darker. Band quite yellow ; spots in 4 and 5 faint.

*bifasciatus aborica*, Tyt. Abor Hills VR.

δ. Upf spot in 3 not to base 3 as in Indian races.

*bifasciatus bifasciatus*, Br. and Gr. N. C. and W. China. (*contractus*, Leech, Washan and Wa-asu-kow, spots smaller).

3a (1a). Upf spot in 3 quite detached from spot in 2.

3b (5). Upf apical spots 4-8 not conjoined in a curve.

3 (4). Unh dark spots prominent and detached. H more rounded than in rest.

*proximus*, Leech. (45). W. China. (= *frater*, Ob, Yunnan).

4 (3). Unh dark spots obscure and coalesced.

*nepos*, Ob. (47). W. China.

5 (3b). Upf apical spots 4-8 conjoined on a curve. Unh black spots more distinct than usual.

*germanus*, Ob. (48). W. China.

## I. 13. Satarupa.—The White Flats. (Plate 30).

Dark brown with white hyaline spots on F and uph a broad white discal area outwardly bordered by black spots.

1a (6a). Palpi below yellow. Upf prominent white hyaline spots two in 1b, 2, 3, cell, 4, 5 and 6-8. Uph broad white central band, leaving costa, margin and base dark brown: margin inwardly flanked by more or less obscure large black spots. Unh base white or bluish white. Clasp divided into two portions, outer stout, inner thinner and usually longer.

## Gopala Group.

1 (2a). Unh no black spot mid 7 before origin v7. Upf spots in 1b large, width=spot in 2. Uph black spots conjoined and separated rather obscurely from the marginal band by narrow bluish suffusion. Below abdomen black. Inner part clasp thin and straight, not longer than outer part.

a. Upf spot in cell minute, against upper edge cell: spots 4, 5 minute: spots 2, 3 with upper outer edges rounded. Uph width of white area in 7=7 mm: all black spots conjoined to the dark margin.

*majasra ouvrardi*, Ob. (68). Tytler's White Flat. Tse-Kou. Wei-si-Bahand, Yunnan. VR.

β. Upf spot in 4 prominent: spots in 2, 3 outwardly excavate. Uph width of white area in 7=3 mm: black spots more detached.

*majasra zulla*, Tyt. (72). Sikkim. Nagas. VR.

γ. Upf spot in cell much larger, half way across cell as in *gopala*: no spots in 4, 5: spots in 2, 3 as in a, but spot in 1b smaller. Uph width of white area in 7=5 mm: black spots semi-detached from dark margin and spot in 7 completely detached.

*majasra majasra*, Fruh. (67). Formosa. (= *formosana*, Matsum: ? *formosibia*, Strand).

2a (1). Unh black spot in 7 before origin v7.

2b (4a). Upf spot in cell across cell or at lower edge. Uph spot in 1c=spot in 3.

2 (3). Upf spot in cell not excavated: spot in 3 not overlapping spot in 2: outer edge of spot in 3 straight. Uph black spots completely conjoined to dark margin. Below abdomen white. Clasp inner part long, very thin and bent right over.

a. Upf spot in cell across cell, lower edge wider: single upper spot in 1b.

*nymphalis nymphalis*, Speyer. (68). Amur. Vladivostock. R.

β. Upf spot in cell reduced to a single small lower spot and sometimes a similar upper spot: 2 spots in 1b prominent=spot in 3.

*nymphalis oberthueri*, nov. (68). Tatsienlou, W. China. NR.

3 (2). Upf spot in cell prominent, across cell: spots in 1b small, upper spot smaller than spot in 3. Clasp inner part long, thin and straight.

a. Upf spot in 3 overlaps spot in 2: spot in cell large, inner edge straight, outer excavate. Uph black spots conjoined to margin.

*splendens monbeigi*, Ob. (65-72). The Splendid White Flat. Siaou-Lou, Pu-tse-fang. Kiu-Kiang. Chang-Yang, China. R.

β. Upf spots reduced, spot in 3 not overlapping spot in 2.

*splendens intermedia*, nov. (72-77). W. China. R.

I. 13. Satarupa.—The White Flats. (Plate 30)—*contd.*

γ. Upf spots still more reduced: spot in cell excavate both sides. Uph black spots smaller and more or less detached.

*splendens splendens*, Tyt. (72-77). Nagas. VR.

4a (2b). Upf cell spot against upper edge, posteriorly pointed.

4 (5). Uph and unh black spots well formed and distinct, separate from one another. All spots upf prominent: spots in 1b = spot in 3; spot in 8 not produced beyond spot in 7. Clasp inner part long, thin and straight.

α. Large, uph black spots widely separated by bluish area, from the dark margin, which is macular and narrow.

\**gopala gopala*, M. (64-70). The Large White Flat. Sikkim to Assam. NR.

β. Larger and darker.

*gopala tonkiniana*, Fruh. Tonkin.

γ. Small. Uph black spots not so well separated.

*gopala hainana*, nov. (58-62). Hainan.

δ. Small. Uph black spots still more conjoined and much more regular: white area mid 7 only  $1\frac{1}{2}$  mm.

*gopala malaya*, nov. (58-62). S. Burma. Sumatra. Malaya. VR.

5 (4). Uph and unh black spots completely submerged into broad dark border, which is posteriorly suffused bluish. Upf spots small: only dots in 4, 5: spot in 8 projects beyond spot in 7. Wings more rounded. Clasp inner part stout and no longer than outer part.

*valentini*, Oh. (58). Tient-Suen, Siaou-Lou, China. R.

6a (1a). Palpi white below. Upf no spot in cell.

Sambara Group.

6 (7a). Uph plain dark brown, black spots showing faintly: cilia plain. Upf spots pale yellow, two spots in 1b, spots in 4, 5 quadrate, prominent. Top of clasp turned over towards a long lower spine.

*nigroguttata*, Matsum. (45-50). Formosa. R.

7a (6). Uph with large white central area, outwardly bordered broadly dark brown, inwardly with a row of dark spots. Upf spots white, pair in 1b and 2, smaller pair in 3 and 4, apical curved row in 5, 6, 7 and rarely in 8. Cilia H chequered brown and white.

7b (10). Above abdomen not plain dark brown.

7c (9). Above abdomen inwardly white, outwardly brown.

7 (8). Abdomen above only the tip brown. Upf spots large: a long broad white streak along the dorsum below the spot in 1b. Uph white area occupies  $\frac{2}{3}$  of the wing, reaches costa, dark spots detached. Unh base bluish, spot in 7 near base, outer spot in 7 nearer spot in 6. Clasp as in *nigroguttata*: in remaining species the end of the clasp is curved and more or less pointed and there are 2 lower spines.

*dohertyi*, Watson (45-50). The Himalayan White Flat. Mussoorie to Kumaon. NR.

8 (7). Abdomen half white and half brown. Upf spots large: no dorsal white streak. Uph  $\frac{1}{3}$  wing white, costa brown, spots not detached. Unh base brownish, spots prominent: outer spot in 7 mid inner spot and spot in 6.



I. 13. Satarupa.—The White Flats. (Plate 30)—*contd.*

*sambara*, M. (40-45). The Sikkim White Flat. Sikkim to Assam. NR. (= *cosima*, Pl and *cosmia*, Swin in error. *indosinica*, Fruh, Tonkin, is described as a dark race with smaller spots: its relationship depends upon the colouring of the abdomen).

9 (7c). Abdomen above brown, narrowly white ringed at each segment. Upf spots large. Uph white area extensive, spots small and semi-detached.

*kirmana*, Pl. (45-50). The Ringed White Flat. Dawnas to Karens. Malaya. R. (= *strigata*, Evans).

10 (7b). Above abdomen plain brown.

a. Uph as *sambara*. Upf spot in 1b reduced to 2 dashes one above the other: spots in 3, 4 more or less quadrate. Unh outer spot in 7 nearer spot in 6. Tip of clasp short and blunt as in *kirmana*.

*affinis cognata*, Dist. (40-45). Malaya. R.

β. Typical *affinis* occurs with genitalia like *cognata*. Also specimens like *cognata*, but with the spot in 3 oblique, genitalia nearer *affinis*.

*affinis niphates*, Weym. (45-50). Sumatra.

γ. Small, genitalia as *cognata*. Upf spots reduced, none in 1b, in 4, 5 narrow and oblique. Uph space 7 all dark.

*affinis niasica*, nov. (40-45). Nias.

δ. Uph white area very extensive, in 6 very much wider than the black spot in 6. Unh outer spot in 7 very far removed from inner spot and close to spot in 6. Upf large spot in 1b, spots in 3, 4 quadrate. Clasp as in *affinis*, but upper spine as long as the lower one.

*affinis javanensis*, Fruh. (45-50). Java.

η. Uph white area in 6 = spot in 6. Uph spot in 1b narrow, spot in 3 oblique. Unh outer spot in 7 mid inner spot and spot in 6. Clasp tip produced, curved and pointed: upper spine shorter than lower.

*affinis affinis*, Druce. (45-50). Borneo.

## I. 14. Tagiades.—The Snow Flats. (Plate 30).

Normally dark brown with small white hyaline spots F. Uph plain or with a snow white tornal area. Unh white.

1a (7a). Upf no white spot in 11 over cell spot.

Atticus Group.

1b (4a). Upf no discal white spots in 2, 3 or cell. Uph discal black spots in 3, 4-5, 6 more or less in line, if visible.

1 (2a). Uph no dark discal spots, narrow white tornal area surmounted by blue suffusion, no marginal spots. Unh plain white, except for dark costal border and rarely a dark spot in 6.

*lavata*, But. (40-45). The Scarce Snow Flat. S. Burma. Malaya. Sumatra. Natuna. Borneo. R. (= *alborivittata*, Druce, Borneo).

2a (1). Uph always traces of dark discal spots. Unh some dark marginal markings.



I. 14. *Tagiades*.—The Snow Flats. (Plate 30)—*contd.*

2 (3). Uph broad white tornal area, which in ♂ is never surmounted by bluish suffusion and in ♀ extends to half way along dorsum.

a. ♂ uph marginal spots on the white area comparatively small: the white area not behind the spot in 4-5: discal spot in 3 rather behind the spot in 4-5 but usually conjoined.

*gana gana*, M. (50-55). The Large Snow Flat. Sikkim to Burma. R.

β. Constantly smaller.

*gana elongata*, Mab and Bouillet. Sumatra, Nias. (= *niasana*, M and B).

γ. ♂ H produced and marginal markings heavier, spot end v4 conjoined to dark area.

*gana avala*, Fruh. Java.

δ. ♂ H produced; white area uph extending behind spots in 4-5: only marginal spots at ends veins 2, 3: black discal spots 3, 4-5, conjoined and in line with spot in 6.

*gana parra*, Fruh. Borneo. Palawan.

η. Uph white area narrower, marginal spotting, more extensive even forming a continuous band to tornus.

*gana elegans*, Mab. Mindanao, Philippines.

3 (2). ♂ uph with blue suffusion at tornus or over tornal white area: ♀ white tornal area not extending to  $\frac{1}{4}$  along dorsum.

a. Uph cilia at tornus normally white: blue suffusion obscure or prominent and may surmount a narrow white band.

*obscurus athos*, Pl. (45-50). The Suffused Snow Flat. S. India. Sikkim to Assam. NR.

β. Uph cilia at tornus normally brown: blue suffusion reduced, never a white band.

*obscurus mectana*, M. Assam to Burma. Siam. Tonkin. NR. (= *patimoka* and *sangarava*, Fruh, Siam and Tonkin).

γ. Uph ♂ white band at tornus more or less surmounted by white suffusion: white area extends to  $\frac{1}{3}$  along dorsum in ♂,  $\frac{1}{4}$  in ♀: small black marginal spots ends vs. 2, 3.

*obscurus menanto*, Pl. Victoria Pt, Burma. Malaya. (= *perakana*, Fruh).

δ. Larger, apex F produced. Uph prominent blue suffusion: cilia white.

*obscurus alica*, M. Andamans. NR.

η. Like *menanto*, but uph spotting more prominent: black spots 3, 4-5 separate and in line, spot in 6 set back.

*obscurus obscurus*, Mab. Sumatra, Nias, Java, Borneo. (= *jetavana*, *mahinda*, *jainas*, Fruh, Sumatra, Borneo, Nias).

ζ. Uph white area as in *obscurus*, marginal spots large, more or less conjoined and 2 additional spots on either side of v1b. Unh prominent discal spots, marginal markings broad, but separated.

*obscurus karea*, Mab. Luzon, Mindoro, Palawan. (= *semperi* and *paceka*, Fruh, from Luzon and Palawan).

4a (1b). Upf always a discal white spot in 3 and usually in 2. Uph discal black spots in 3, 4-5 and 6 never in line or conjoined, spot in 4-5 much nearer margin.

4b (6). Upf no spot in cell (rarely lower spot present).

1. 14. *Tagiades*.—The Snow Flats. (Plate 30)—*contd.*

4 (5). Uph narrow white tornal area, surmounted by blue suffusion and black dots end vs. 2, 3.

\* *distans*, M. (45-50). The Ceylon Snow Flat. Ceylon. NR.

5 (4). Uph plain dark brown and cilia brown.

a. Large with angular wings. Upf spots in 2, 3 large. Unh suffused bluish with rather obscure dark discal spots.

*atticus khasiana*, M. (42-52). The Common Snow Flat. Central Provinces to Bengal. Dun to Tavoy. Siam. C. (= *epicharmus*, Fruh, Siam).

β. Smaller and darker. Upf discal spots small and in 2 often absent. Unh pale to dark brown with dark discal spots.

*atticus atticus*, F. (35-45). Tavoy to S. Burma, Siam, Malaya, Pulocondor, Saigon, Sumatra, Nias. C. (= *ravi*, M and *utanus*, Pl, Malacca : *lugens*, Mab, Saigon : *yotissa*, Fruh, Nias).

γ. As *atticus*, but discal spots upf prominent and often spots in 4, 5.

*atticus ravina*, Fruh. Andamans. Car Nicobar. NR.

δ. Unh white except for dark costal and narrow marginal border and dark discal spots.

*atticus helferi*, Fd. Central and South Nicobars. NR.

η. Large form. Upf spots comparatively small, but usually a lower spot in the cell. Unh white.

*atticus balana*, Fruh. (45-50). N. Borneo. NR.

ζ. As last, but unh as *atticus*.

*atticus rajaghra*, Fruh. Borneo.

6 (4b). Upf always at least an upper spot in the cell : spots in 2, 3, prominent and often spots in 4 and 5.

*japetus nepos*, Lat. (40-50). Java. Bali. C. (minor races are *brasidas*, Doh, Sumba : *enganicus*, Fruh, Engano : *esvara*, Fruh, Lombok and Sumbawa : *xarea*, Mab, Timor : *mangala*, Fruh, Babber).

β. Upf white spots large, cell spot double. Uph blue suffusion much more extensive. Unh marginal band continuous.

*japetus titus*, Pl. Philippines. (= *latreillei*, Stg, Palawan).

γ. Upf spots very variable. Uph small white tornal area, surmounted by prominent bluish white suffusion, black spots prominent. Unh costal dark area extends to mid wing. Larger.

*japetus obscurata*, Stg, (45-55). Celebes. (minor races are *obscurata*, Stg, Sangir : *prasnaja*, Fruh, Celebes : *narus*, Fruh, Sula Is.)

(An examination of the genitalia shows that *japetus* is very closely allied to *atticus* and *distans* and not to *obscurus* or *gana*. *japetus*, Cr, is from the Moluccas and is a very variable species flying throughout the Indo-Australian region to the Solomon Islands).

7a (1a). Upf a hyaline white spot in 11 over the cell spot : cell spots never conjoined : lower cell spot and spots in 2, 3, 4, 5 may be absent. Uph normally pure white tornal area with prominent black marginal spots.

Nestus Group. (*nestus*, Fd, from Moluccas).

7b (13a). Unf no sharply defined white streak in 1b, but may be faint.

7c (12). Uph always prominent marginal spot end v 1b.

I. 14. *Tagiades*.—The Snow Flats. (Plate 30)—*contd.*

7d (9a). This spot far larger than the rest and never conjoined to them: white area restricted, not to half way along dorsum, nor beyond v4.

7 (8). ♂ *H. tornus* produced, termen straight: uph white area very restricted, only small marginal spot end v2 in addition to the spot on v 1b. ♀ white area wider, a marginal spot at end v3 as well.

*tqba*, DeN. (37-44). The Small Snow Flat. Mergui to S. Burma. Malayana, except Java. R. (*nana*, El and Ed Nias).

8 (7). ♂ *H. normal*. Uph white area more extensive, black spots ends vs. 1b, 2, 3.

*waterstradti*, El and Ed (42). Waterstradt's Snow Flat. Malaya. Peninsular Siam. Java. Borneo. R. (=var. B of Distant's *calligana*: *tubulus*, Fruh, Java).

9a (7d). Uph spot end v 1b hardly larger than rest, at end vs. 2, 3 and usually 4: tornal white area to half way along dorsum and usually to v6 on the disc: marginal spots often conjoined with bluish suffusion between them.

9 (10a). Uph with normally a dark postdiscal spot on the white area in 1c, also in 3 against discal spot 4-5 and between marginal spots in 3: sub-marginal spots nearly conjoined. Upf no lower cell spot.

*menaka*, M. (43-55). The Spotted Snow Flat. Kashmir to Karens. Siam. W. China. Tonkin. C. (=vulturina, Pl: *gavina*, Fruh, Tonkin).

10a (9). Uph these black spots absent.

10 (11). Unh spot in 4-5 single as usual.

α. Uph marginal spots well separated: in ♂ spot end v4 merged to dark area. Clasp with a lower spine.

*litigiosa ceylonica*, nov. (37-44). The Water Snow Flat. Ceylon. NR.

β. Uph marginal spots separate in the DSF (*vajuna*): conjoined in the WSF, spot end 4 separate. Lower spine of clasp obsolete.

\**litigiosa litigiosa*, Mosch. S. India. Sikkim to Tavoy. Siam. NR. (=eson, Bdv; *vajuna*, Fruh, S. India: ? *multipunctatus*, Crowley, Hainan: *coharens*, Mab, Formosa).

γ. Uph spots usually more or less conjoined; spot end v4 conjoined to the dark area. End of clasp straight, not curved and usually with a small spine before the tip.

*litigiosa ultra*, nov. Tavoy to S. Burma. ? Malaya. Sumatra. Nias. NR.

δ. Uph and unh very broad dark border, discal spots conjoined. Clasp as β. Also a larger form wings produced, uph marginal spots separate (*major*).

*litigiosa andamanica*, nov. Andamans. NR. (seasonal form *major*, nov.).

11 (10). Unh spot in 4-5 double. Uph marginal spots well separated from the dark area.

*sumbawana*, El and Ed. (37-42). The Sumbawa Snow Flat. Java, Bali. Sumbawa, Lombok, Flores. NR.

12 (7c). Uph no spot end v 1b, only prominent spots end vs. 2, 3: white area large extending to more than half way along dorsum and discally to v6.

I. 14. *Tagiades*.—The Snow Flats. (Plate 30)—*contd.*

*calligana*, But. (35-45). The Malayan Snow Flat. Malayana. NR. (= *yapatha*, Fruh, Nias.).

13a (7b). Upf usually 2 prominent white discal streaks in 1b.

13 (14). Upf white area extends discally to v6 and half way along dorsum. Unh no lower dark discal spots.

*martinus*, Pl. (40). Philippines. (= *nicaja*, Fruh, Bazilan : *stramineipennis*, Stg).

14 (13). Upf white area not beyond v4 and only  $\frac{1}{3}$  or  $\frac{1}{4}$  along dorsum.

a. Unh dark costal area much extended, often some lower discal spots.

*sem trebellius*, Hopf. (45). Celebes. Sula Is. Bangkei (minor races *mitra*, Mab, Sula Mangoli : *avathana*, Fruh, Sula Besi).

$\beta$ . Upf entirely dark : also unh except for whitish dorsal streaks. *sem sem*, Mab, Sangir.

I. 15. *Abraximorpha*.—The Flats.

1 (2). Above slate brown with numerous white markings, presenting a chequered appearance. Upf white with large slate brown spots. Unh dark markings restricted, veins white. Palpi orange. Antennæ black.

*davidii*, Mab. (45-55). The Chequered Flat. S. Shan States, W. and C. China. R. (Race *ermasis*, Fruh, Formosa : *heringi*, Mell, N. Kuangtung).

2 (1). Above and below dark brown, base upf, most of upf and all unh clothed olive scales. Upf with hyaline white spots as in *Celænorrhinus*, large spot in cell over origin v3 and opaque costal spot above it, large spot in 2 immediately below, detached smaller spot in 3 and in 1b towards tornus from v1-2, small detached apical dots in 4-8, spot in 6 being midway between spots in 5 and 7. H cilia prominently chequered dark brown and white. Unh there may be a small white spot in cell under origin v6 and a discal spot in 6. Palpi yellow below. Antennæ pale yellow on inside under club.

*chamunda*, M. (45-55). The Olive Flat. Sikkim to S. Shan States. NR.

Though very dissimilar in appearance, the structure and genitalia of these two species are nearly alike.

I. 16. *Odina*.—The Flats. (Plate 30).

Orange and black : no hyaline spots.

1 (2). Orange with large black spots, except on the outer  $\frac{1}{3}$  upf, which is dark brown, traversed by a fine zigzag ochreous line.

\**decoratus*, Hew. (35-40). The Zigzag Flat. Assam to Burma. Tonkin. R. (= *bicolor*, Ob, Tonkin).

2 (1). Dark brown with orange markings.

a. Upf discal spot in 2 separated from the spot in 3 by the dark vein, the conjoined spot oblique : yellow spot at base from v1 to costa undivided. Upf single large spot mid wing from v1a to 2, undivided by v1b. Orange areas predominate, being separated by

I. 16. Odina.—The Flats. (Plate 30)—*contd.*

comparatively narrow lines into irregular geometrical figures. Upf prominent yellow streaks at tornus.

\**hieroglyphica ortygia*, DeN. (35-40). The Polygon Flat. S. Burma. VR.

β. Similar, but uph spot mid wing from v 1a to 2 divided by v 1b. Dark areas much more extensive.

*hieroglyphica hieroglyphica*, But. Malaya. Sumatra. Labuan. VR.

γ. Upf discal spots in 2, 3 conjoined, basal spot divided by mv, sub-marginal series of narrow orange arrows along each of vs. 1-4. Uph rather as last, an orange streak from base to mid 1b and tornal orange divided.

*hieroglyphica cuneiformis*, Semp. Philippines. Luzon.

δ. Upf completely velvet black with a single prominent orange spot mid 7 and obscure spots towards dorsum. Upf dusky, purple glossed, basal spot absent.

*hieroglyphica chrysomelæna*, Mab. Celebes.

η. Upf yellow basal spot from v1 to costa divided by the mv. Upf much as β, but uph is very different: 3 series yellow spots, basal (in 1c, cell, 7), central (in 1b-c conjoined, base 2, end cell) and complete submarginal series.

*hieroglyphica sulina*, nov. Sula Besi.

## I. 17. Mooreana.—The Yellow Flats. (Plate 30).

1a (3). Upf large tornal yellow area.

1 (2). Upf black with numerous small hyaline white spots. Upf large tornal yellow area surmounted by large dark spots separated by pale veins more or less.

α. Tornal area H deep yellow, continued unh by yellow veins to the base: extending uph to v5.

*trichoneura pralaya*, M. (40-45). The Yellow Flat. Sikkim to N. Burma. NR.

β. Unh darker. Upf yellow area to v3.

*trichoneura pellita*, Fruh. Tonkin. Hainan. NR.

γ. Upf tornal area paler yellow, to v5. Unh basal  $\frac{1}{2}$  bluish white, outer  $\frac{1}{2}$  pale yellow.

\**trichoneura trichoneura*, Fd. Karens to S. Burma. Malaya. Sumatra. NR. (Races *nivosa*, Fruh, Nias, unh all white: *niva*, Fruh, Java, unh all pale yellow: *trichoneuroides*, El and Ed, Borneo, uph very pale yellow to v4, unh white).

2 (1). Upf no hyaline white spots: yellow apical spots 4-8 and tornal yellow patch. Upf and unh broad yellow tornal area to apex.

*princeps*, Semp. (40-45). Philippines. (= *basilana*, Fruh, Banzilan).

3 (1a). Above plain dark brown, purple glossed. Unf dull blackish brown with a yellow basis. Unh costa brown, rest reddish yellow with discal round black spots. Body ochreous below. Antennæ with yellow club.

*paradoxus*, Fruh. (45). The Dark Yellow Flat. Lawas, N. Borneo. VR.



## I. 18. Pintara.—The Orange Flat. (Plate 30).

Above black with steely blue sheen. Upf large hyaline white spots. Uph more or less orange with large black spots, large spot before end cell and postdiscal row preceding the dark border.

α. Upf no apical spots: discal spots large yellowish in 2 and cell, two smaller in 1b and one in 3: obscure suffused sub-marginal spots, more prominent unf especially at tornus. Uph orange area very extensive, leaving only narrow dark costa and termen: post-discal spots towards apex merged to border.

\**tabrica pinwilli*, But. (50-55). Assam to Burma. Malaya. Sumatra. Borneo. R.

β. Upf 5 apical spots 4-8: discal spots larger, 2, 3 and cell conjoined and additional spot base 4. Uph inner edge border crenulate.

*tabrica tabrica*, Hew. Darjiling. VR. (unique).

γ. Upf 5 apical spots: discal spots smaller, more separate: in ♂ spot in 3 divided into two and an elongate pale streak towards base. Uph mostly shaded dark brown, leaving only tornal  $\frac{1}{4}$  dusky orange: postdiscal spots considerably larger.

*tabrica melli*, Hering. Tsha-Jiu-San, China. Hainan. VR. (= *bowringi*, Joicey and Talbot, Hainan).

## I. 19. Daimio.—The White Flats. (Plate 30).

Above brown with hyaline white spots F and white area uph.

1 (2a). Palpi white below. Cilia white chequered. Upf spot across cell and a dash in 11 above it: prominent spots in 1b, 2, 3, and apical 4-8.

α. Abdomen plain brown. Uph plain, but a central white band may be indicated or even be prominent.

*tethys tethys*, Men. (40-45). The China Flat. Japan. N. to C. China. NR. (= *felderi*, But, form with white band: *daiseni*, Riley, an ab. ? *saishiuana*, Okamoto, Quelpart Is. *yamashiroensis*, Kato, ? var).

β. Uph broad white central band, dark spot in 1c more or less detached from the terminal dark area. Unh base bluish, large black spot mid 7, smaller base 7 and similar spot in cell below it: discal black spots conjoined to dark area. Abdomen narrowly white ringed.

*tethys moorei*, Mab. C to S. and W. China. NR. (= *chinensis* and *lineata*, M and B).

γ. Considerably darker than *moorei*.

*tethys formosana*, Fruh. Formosa.

δ. As *moorei* but smaller. Uph white band narrow and discal spots clear.

*tethys birmana*, Evans. (35-40). N. Shan States. VR.

2a (1). Palpi yellow below. Cilia at most faintly chequered. Upf no spot in 11 above cell spot.

2b (6a). Upf spot in cell always much smaller than the spot in 2.

2c (4a). Abdomen above never whitish striped where the band meets it. Tegumen end expanded. Uph discal band pure white.



I. 19. Daimio.—The White Flats. (Plate 30)—*contd.*

2 (3). Upf spot end cell over centre of spot in 2.

*a.* DSF upf spot in 1b to dorsum twice as wide as spot in 2. Uph white band over  $\frac{3}{4}$  wing, black spots very distinct. WSF as *indica*. *sinica narada*, M. (35-40). The White Yellow-breast Flat. Sikkim. NR.

*β.* Upf spot in 1b to dorsum no wider than spot in 2. Uph white area less than  $\frac{1}{2}$  wing, black spots submerged in dark area. *sinica indica*, Evans. Assam. NR.

*γ.* Upf spot in 1b faint. Uph white area under  $\frac{1}{4}$  wing, black spot end cell. *sinica sinica*, Fd. C. and W. China. NR. (= *diversa*, Leech: *epitalas*, Ob).

3 (2). Upf spot end cell mid spots in 2 and 3: all spots small. Uph white area over  $\frac{1}{2}$  wing, no sign of black spots.

*minima*, Swin. (32). The Tiny Yellow-breast Flat. Labuan, Borneo. VR.

4a (2c). Abdomen above narrowly striped white where the band meets it. End tegumen not expanded.

4 (5). Upf spot in cell small against lower edge, over centre of spot 2.

*a.* ♂ upf no (or very faint) spot in 1b: uph band narrow sullied (wider DSF), prominent spot end cell in WSF. ♀ upf spot in 1b to dorsum nearly as wide as spot in 2: uph band broad, spot end cell normally absent. Abdomen above striped in ♂ at upper edge discal band: in ♀ striped throughout.

*phisara phisara*, M. (35-45). The Dusky Yellow-breast Flat. Sikkim to Burma. Malaya. NR. (= *expansa*, M and B).

*β.* ♂ uph discal band nearly or quite absent. ♀ normal.

*phisara tenebrosa*, J and T. Hainan. NR.

5 (4). ♂ upf spot in cell usually against upper edge with a point towards the outer edge of the spot in 2: ♀ a narrow oblique line across cell. ♂ upf no spot in 1b; ♀ small spot against v1 not reaching spot in 2, but may extend to dorsum. Uph never a spot end cell: inner edge dark spotted margin very regular.

*a.* ♂ uph white area narrow, circular, rather sullied: ♀ broader, white.

*limax diræ*, DeN. (35-40). The Malay Yellow-breast Flat. Tavoy to S. Burma, Malaya. Pulo Laut. Borneo. R.

*β.* Uph pale area absent and upf spots small.

*limax fumosa*, El and Ed. Sumatra (with *diræ* and intermediates). Nias. R. (= *graya*, Stg, MS.: *formosa*, Swin, in error).

*γ.* ♂ ♀ uph white area more extensive, pure white, sharp defined.

*limax limax*, Pl. Java. Bali. NR. (= *visana* Fruh).

*η.* ♂ upf spot end cell against lower edge, over outer edge of spot in 2: uph as *limax*, band narrower.

*limax philippina*, nov. Palawan. R.

6a (2b). Upf spot in cell about as large as the spot in 2, inner edges in line or spot in cell nearer base, across cell and diminishing at upper end.

6 (7). Uph always a prominent black spot end cell on the pale area and spot in 6 detached from dark margin: pale band usually

I. 19. Daimio.—The White Flats. (Plate 30)—*contd.*

to costa. Abdomen outer  $\frac{1}{2}$  ( $\frac{1}{3}$  in ♀) brown, narrowly white ringed, rest pale yellow in ♂, white in ♀.

*a.* Upf spot in 1b usually as large as the spot in 2, flanked either side by 2 black spots: apical spots conjoined and inner edges in line: centre of cell spot over inner edge of spot in 2. Uph pale band at least = dark margin, pale yellow in ♂, white in ♀. Veins on dark areas more or less pale.

\**bhagava bhagava*, M. (35-45). The Common Yellow-breast Flat. S. India to Assam to Tavoy. W. Siam. NR. (= *milliana*, Swin).

*β.* Much darker and markings narrower. Uph band white.

*bhagava andamanica*, WM and DeN. Andamans. Nicobars. R. 7 (6). Uph no spot end cell or any spot on the pale area, pale band not to costa. ♂ uph discal area bright yellow, in ♀ white. Upf apical spots irregular, no prominent spot in 1b.

*a.* Upf no spots in 4, 5. Uph and unh pale area sharply defined, prominent series elongate sub-marginal spots, suffused above.

*celebica corona*, Semp. (45). Philippines.

*β.* Upf usually dots in 4, 5. Uph and unh edges of pale area suffused, an obscure dusky submarginal band. Uph pale discal area dusky.

*celebica celebica*, Fd. (45-50). Celebes. (= *permena*, Hew, N. Celebes: *nivescens*, Fruh, S. Celebes).

*γ.* Smaller. Uph pale sub-marginal band faint, pale discal areas clear and sharply defined. Abdomen in ♂ prominently striped white and in ♀ pure white opposite the discal band.

*celebica sulina*, nov. (35-45). Sula Mangoli and Besi.

## I. 20. Coladenia.—The Pied Flats. (Plate 30).

Above fulvous, dark brown or grey: large hyaline spots F and dark spots H.

1 (2a). H tibiae fringed. Above dark golden brown: uph and unh dark discal spots, suffused and conjoined, unh spaces between more or less tawny. Upf spots yellow in ♂, white in ♀: cell spot outwardly excavated, apical spots irregular. Tegumen divided, with 2 side horns: clasp simple.

*a.* Dark and dull. Upf cell spot almost divided, spot in 3 detached.

*dan dan*, F. (40). The Fulvous Pied Flat. S. India. C.

*β.* Larger, brighter with larger conjoined spots. Very variable. Cilia chequered.

\**dan fatih*, Koll. (42). Kulu to Karens. C.

*γ.* Smaller and darker, very like *dan*.

*dan dhyana*, Fruh. (35-40). Dawnas to S. Burma. Siam. Malaya. Banka. Sumbawa. Lombok. Flores. Celebes. C. (Races *dea*, Leech., W. China, very large 55 mm *sumatrana*, Fruh brighter than *dhyana*. *fulvescens*, El and Ed, Borneo, similar spots F very large and coalesced. *eacus*, Lat = *dichroa*, Pl, Java, Bali, as *sumatrana*, rather duller: *sumbawana*, *lombokiana* and *celebica*, Fruh, are minor races.)

I. 20. *Coladenia*.—The Pied Flats. (Plate 30)—*contd.*

2a (1). H tibiæ tufted in ♂. Tegumen simple, clasp divided. F spots white: H black spots separated.

2b (8). Uph no hyaline spots.

2 (3a). Unf always a yellow discal spot in 1b, followed by similar sub-marginal spots and white cilia.

a. Dark, markings small: cilia H dark brown. Upf apical spots small, irregular. Uph dark spots diffused.

*indrani tissa*, M. (35-40). The Tricolour Pied Flat. Ceylon. NR. (= *lankæ*, Pl).

β. Dark brown, large markings. Above and below prominent tawny sub-marginal spots. Upf apical spots coalesced.

*indrani indra*, Evans. S. India to Bengal. NR.

γ. Tawny brown. Uph black spots sharply marked, sub-marginal tawny spots faint.

*indrani indrani*, M. Mussoorie to Sikkim. NR.

δ. Above bright tawny ochreous. Upf and below tawny spots very large and prominent.

\**indrani uposathra*, Fruh. N. Burma to Ataran. Siam. Singapore. Java. R. (= *atarana*, Evans).

3a (2). Unf no tawny spot in 1b or elsewhere. Apical spots F irregular.

3b (5a). Uph or unh no black spot towards the base in 1c and upf no black spot before the middle in 1b.

3 (4). Antennæ above broad whitish below club. Tegumen with dorsal crest: clasp bifid at end. Unf single white upper dot in 1b followed by a large diffused yellowish white spot.

*agnioides*, El and Ed. (40). Elwes' Pied Flat. Nagas. N. Burma. VR.

4 (3). Antennæ plain. Tegumen no dorsal crest: clasp outer part turned over inner part. Unf 2 white dots in 1b. Uph cilia at apex usually white.

*agni*, DeN. (40). The Brown Pied Flat. Sikkim to Burma. Malaya. Sumatra, Borneo. R. (*igna*, Semp, Philippines, a "greener" race).

5a (3b). Uph and usually unh with a black spot towards base 1c and upf a black spot before mid 1b.

5 (6a). Upf costal spot over cell spot in 11 not crossing v12. Above dark brown no grey scaling.

a. Upf spots sordid yellowish white.

*kehelatha semperi*, El and Ed (40). Mindanao, Philippines.

β. Upf spots white. Uph well marked dark sub-marginal band.

*kehelatha kehelatha*, Hew. (40). Celebes. Sula Is. (= *utilia*, Mab).

6a (5). Upf costal spot over cell spot in 11 crosses v12 to costa.

6 (7). Termen F and H and discal band H even.

a. Above overlaid grey scales.

\**laxmi laxmi*, DeN. (40-50). The Grey Pied Flat. Sikkim to Burma. Siam. VR. (= *buchananii*, DeN, ♀. DeN's ♂ subsequently described is *palawana*).

β. Above dark brown, not overlaid grey scales.

*laxmi sobrina*, El and Ed Malaya. Sumatra.

I. 20. *Coladenia*.—The Pied Flats. (Plate 30)—*contd.*

7 (6). Wings angled as in *Tapena*. Uph discal band angled out in 3-4 corresponding to the wing contour.

*palawana*, Stg. (32-36). The Angled Flat. Malaya. Sumatra. Borneo. Palawan. VR.

8 (2b). Uph large hyaline white spot end cell and complete discal series. Upf hyaline spots very large.

*vitrea*, Ob. (40-50). The Chinese Pied Flat. W. China. VR. (*mæniata*, Ob, E. Thibet and W. China is a well marked variety, commoner than the typical form: uph overlaid grey scales, only discal spots in 4, 5, 7 and mid 7 hyaline and upf spots in 1b closer together: genitalia alike).

I. 21. *Sarangesa*.—The Small Flats. (Plate 30).

Above dark brown, black marbled and with small hyaline spots F; usually a double or 2 single cell spots and a spot on costa above, spots in 2 and 3 and apical 6-8. Unh a discal row, spot end cell and bases 1 and 7.

1a (3). Unh spots small and white.

1 (2). Cilia H prominently chequered black and white. Upf spots minute or absent. Small.

a. Cilia F obscurely chequered. Upf with minute spots, including spot in 1b before middle and obscure irregular sub-marginal row, more prominent unf. Uph traces of small pale spots. Unh very prominent minute dots.

*sati sati*, DeN. (25-30). The Tiny Flat. Cutch to Central Provinces. NR.

β. Cilia F and H prominently chequered. Above inky black, frosted sparse white scales, no spots. Below traces of spots.

\**sati hopkinsi*, Evans. Madras, Bangalore. R.

2 (1). Cilia very obscurely chequered. Upf single spot across cell, spot in 2 comparatively large and quadrate, 2 dots in 1b. Unf obscure irregular sub-marginal spots. Unh small white spots. Uph obscure large dark spots.

*purendra*, M. (30-35). The Spotted Small Flat. N. Kanara, Bombay to Sind and Central Provinces. Kangra to Kumaon. NR.

3 (1a). Unh with dark spots which are obscurely traceable uph.

a. Unh dorsal  $\frac{2}{3}$  including cilia white with sharply defined small spots, 2 in 1c, one in each 2 and 3, large spot in 4-5. Upf spots minute, 2 dots in cell and dot on costa above them.

\**dasahara albicilia*, M. (30-35). The Common Small Flat. Ceylon. C. (= *sezendis*, Plotz).

β. Unh grey brown with large diffused dark spots. Upf very variable, may be single spot across cell or 2 dots; discal dots in 2 and 3 present or absent. Uph cilia white.

*dasahara davidsoni*, Swin. S. India to Bombay. (= *hampsoni*, Swin). NR.

γ. As last, cilia brown, sometimes whitish.

*dasahara dasahara*, M. Central Provinces. Kangra to Burma. Siam, Tonkin. Andamans. Langkawei Is. C.

I. 22. *Darpa*.—The Angles.

Above black with small hyaline spots upf, 1 or 2 in cell, may be 2 in 1b, discal in 2 and 3, apical 4, 5 (may be absent) and 6-8. Uph broad pale tornal area, surmounted by a row of large black discal spots, separated by pale veins. Unh mostly pale, small discal dark spots 1c-3, large 4-5, 2 spots in 7, spot upper edge cell. H produced and tornal cilia elongate. Palpi with loose brown and white or yellow scales.

1 (2a). Termen F and H highly crenulate; H angled at v3 and v7. Upf with bands of white scaling; cell spot across cell reaching v12 and continued along mv to a small spot near base 2, apical spots 6-8 conjoined and in a straight line. Uph tornal area pale yellow, extending to v5 and bearing small black spots ends vs 2 and 3; vs 6 and 7 pale to margin. H tornal  $\frac{1}{2}$  clothed long hairs.

*hanvia*, M. (35-40). The Hairy Angle. Mussoorie to Assam. R.

2a (1). Termen F and H comparatively even. H only angled at v4. Upf spots normal, no spot on costa over cell spot, apical spots 6-8 separate and irregular. Uph tornal area pure white.

2 (3). Uph and unh 2 small spots on white area ends vs 2 and 3. Uph white area to mid vs 3 and 4. Palpi below brown and white.

*striata*, Druce. (35-40). The Striated Angle. Assam to Burma, Malay Peninsular, Sumatra, Borneo. R. (= *dimidiata*, Fr).

3 (2). Uph and unh no spots on white tornal area, which extends to v4. Palpi yellow and brown below.

*pteria*, Hew. (35-40). The Snowy Angle. S. Burma, Malay Peninsular, Borneo, Philippines. R. (= *dealbata*, Dist).

I. 23. *Tapena*.—The Angles. (Plate 31).

Above nearly black in ♂, brown in ♀. Uph an upper hyaline spot in cell between origins vs 6 and 7. Upf dark diffused central Y band, black spot near base cell, base 1b and near tornus, 2 or 3 hyaline apical dots. Uph narrow dark discal band and dark spot base 1c, mid and base 7. ♀ upf dark markings faint; separate hyaline spots cell, 2, 3 and dot in 1b.

a. Large. Upf only 2 apical spots.

*\*thwaitesi thwaitesi*, M. (40-45). The Black Angle. Ceylon. R.

β. Small. Upf 3 apical spots. Paler.

*thwaitesi hamptoni*, El and Ed. (30-35). S. India. R.

γ. Small and dark. Upf usually with 3 prominent apical spots.

*thwaitesi minuscula*, El and Ed. (30-35). Assam to S. Burma, Malay Peninsular. Sumatra. Borneo. VR.

I. 24. *Ctenoptilum*.—The Tawny Angles. (Plate 31).

Above ochreous brown. Upf and uph with white hyaline spots crowded together in the middle. Upf large spot across cell and 2 spots on the costa above it, also bar end cell, 2 spots in 1b, large discal spot in 2 under cell spot and sometimes a dot base 2, small spot in 3, dots in 4 and 5, apical spots 6-8; dark band beyond spots. Uph spots numerous and crowded.



I. 24. *Ctenoptilum*.—The Tawny Angles. (Plate 31)—*contd.*

1 (2). Upf hyaline spots large at apex, spot in 7 elongated and much longer than the spots on either side; a spot base 2. Bright ochreous brown above.

\**vasava*, M. (35-40). The Tawny Angle. Mussoorie to Burma. NR. (*chinensis*, El, is the larger, brighter race from W. China).

2 (1). Upf apical hyaline spots 6-8 smaller and of equal size; no spot base 2. Below prominently frosted white scales.

\**multiguttata*, DeN. (35-40). The Multispace Angle. Manipur to Burma. R.

I. 25. *Odontoptilum*.—The Angles. (Plate 31).

Above chestnut brown. Upf with hyaline white spots, but discal spots small or absent. Uph with white lines. Unh mostly white with some dark markings at tornus and costa.

1a (3a). Upf no white lines.

1 (2). ♂ brush of hairs on scapula not collected into a pencil. Upf inner  $\frac{2}{3}$  pale brown, outer  $\frac{1}{3}$  bright chestnut; broad dark chestnut band before middle between v1 and scv and a similar postdiscal band; discal white crescentic spot in 2 and dot in 3; prominent apical spots in 7 and 8 and may be a dot in 6. Uph pale brown and apex dark chestnut; straight narrow white sub-basal white line, similar postdiscal irregular line, sub-marginal and marginal lines; clothing of whitish hairs about dorsum and tornus.

\**angulata sura*, Fd. (40-45). The Chestnut Angle. S. India. Kulu to Burma. Siam. Malaya. NR. (= *kuki*, Tyt, an ab. Slightly differentiated races are *angulata*, Fd, S. China to Tonkin: *sumatrana* and *mahabina*, Fruh, Sumatra and Java: *hyperides*, Doh, Sumbawa, Lombok, transitional to *helias*).

2 (1). ♂ brush of hairs on scapula collected into a pencil on either side and fitting into a groove in the basal half of 1c uph: in *helisa* the groove is filled with androconial scales. Markings generally as in *angulata*.

a. Upf dark and uniform, white spots minute. Uph broadly suffused violet in middle, postdiscal white line suffused. *helias helisa*, Semp. (42). Philippines. (?= *subangulata*, Fruh, Bazilan, described as a large form of *angulata*).

β. Upf more like *angulata*. Uph suffusion much whiter, dorsal half of termen white.

*helias helias*, Fd. (48-52). Celebes.

3a (1a). Upf with white lines.

3 (4). Upf white line extreme base continued on H; a short obscure line under origin of v2; a central line from costa to dorsum across H to the white dorsum; a discal line from v3 to dorsum and continued as a highly irregular line on H; apical hyaline spots small may be a hyaline dot in 3: H cilia white. Above dark chestnut. Upf rather obscure sub-marginal band of white scaling. Uph termen narrowly white, followed by a dusky band and then a broad irregular white band obscurely crossed by dark veins. Unh white to v7, faint dark tornal spots.



I. 25. *Odontoptilum*.—The Angles. (Plate 31)—*contd.*

\* *pygela ragupta*, Fruh. (35-40). The Banded Angle. Karens to S. Burma, Malaya, Sumatra, Nias. NR. (Insignificant races are *pygela*, Hew, Borneo and *javonica*, Fruh, Java).

4 (3). Above paler. Uph streak in 2 tends to be hyaline followed by hyaline spots in 3 to 6 connecting with the apical spots in 7, 8. Uph all white except for the brown base, apex and margin.

*leptogramma*, Hew. (38). Philippines.

I. 26. *Caprona*.—The Angles. (Plate 31).

Upf with hyaline spots: across cell (single, double or absent), large in 2, dot in 3, usually 2 dots in 1b: apical 6, 7, 8 and sometimes in 4, 5.

1 (2). Upf no sharply defined row of pale sub-marginal spots.

a. WSF—Upf dark brown with a more or less prominent central and submarginal ochreous area from costa to dorsum; uph a golden to dusky ochreous central band divided by dark veins and outwardly flanked by conjoined dark spots; a broad dark ashy border from dorsum to v4. Unh white with basal, discal and submarginal rows of dark spots, cilia dark brown.

\* *ransonnetii ransonnettii*, Fd. (35-45). The Golden Angle. Ceylon. S. India to Dun to Assam. NR. (= *potiphera*, Hew. *hamiltonii*, DeN, an aberration, Assam, with grey scaling and obsolete markings).

β. DSF. Form I. Dark brown with numerous dark ochreous spots, exactly as in *agama*, but not so well defined and discal spots in 1b are hyaline. Unh as in a, but all spots very small: sub-marginal spots form a dusky continuous band. Cilia very prominently chequered.

*ransonnettii lanka*, nov. (35). Ceylon, Nilgiris. R.

γ. DSF Form II. Very similar to a but much paler and with all yellow markings more extensive.

*ransonnettii taylorii*, DeN. (35-40). S. India to Dun and Bengal. NR.

δ. DSF. Form III. Above ochreous brown with on upf dark base and dark areas round the hyaline cell spot and beyond the apical and discal spots, a dark submarginal band: may be a white spot base cell. Uph with 3 rows obscure diffuse dark spots. Unh ochreous to brown with 3 rows dark spots more or less well defined or absent, when wing looks striated. Cilia faintly chequered.

\* *ransonnettii saraya*, Doh. (35-40). Kumaon. Nepal.

η. A single variable form generally resembling the DSF of the preceding race, but typically much darker brown above, with very obscure dark markings. Below much whiter, due to intense frosting, but dark diffused spots unh show clearly.

\* *ransonnettii alida*, DeN. Assam to Dawnas. NR.

ξ. As *lanka*, but considerably larger.

*ransonnettii siamica*, Swin. (40). Siamese Shan States. (= *mettasuta*, Fruh, S. Annam).

ε. Uniform ochreous brown. Upf white spot at base cell followed by black short bar, discal hyaline spots black circled. More

I. 26. *Caprona*.—The Angles. (Plate 31)—*contd.*

or less obscure dark postdiscal band of spots on F and 2 central rows H. Below frosted white scales. Cilia faintly chequered.

*ransonnettii erosula*, Fd. (40). Celebes. Alor. (= *pelligera*, Fruh, S. Celebes.)

2 (1). Above dark brown with well defined sub-marginal pale yellow spots and prominently chequered cilia. Upf in addition to the hyaline spots numerous pale yellow spots in central and post-discal rows, spot base cell and crescent end cell. Uph 3 rows straw coloured spots in addition to the sub-marginal row. Unh white with 3 rows black spots, sub-marginal very large, and marginal black line.

a. comparatively large.

\* *agama pelias*, Fruh. (30-50). The Spotted Angle. S. India to Mussoorie to Burma, Tonkin, Siam, Hongkong. NR. (?= *parvipunctata*, M and B, Cochin-China).

β. Like a small *pelias*. Uph spots are small and clearly defined, basal spot in 1b divided into 2. Uph spots much reduced, to spot mid and end cell, postdiscal and sub-marginal row. Flies with last.

*agama elwesi*, Watson. (30-35). Manipur to N. Shan States. R.

γ. As *pelias*, but there is a tendency for the central yellow spots to be larger and the postdiscal smaller: spots darker.

*agama agama*, M. (40-50). Javi. Bali. NR. (= *syrichtus*, Fd. and *danae*, Pl).

δ. Above much darker, sub-marginal and hyaline spots pale yellow, remainder dark ochreous and much reduced. Uph no postdiscal spots.

*agama brunnea*, nov. (40). Sumbawa.

I. 27. *Gomalia*.—The African Marbled Skipper. (Plate 31).

Above olive brown with greenish hairs. Upf a narrow black band before the middle from v1 to scv; semi-hyaline small spots across cell, discal in 2 and 3 and apical in 6-8. Uph a regular central white band from v1 to v7 and an obscure submarginal pale band. Below rather pale brown, white markings more extensive; unf dorsum pale; unh band from base cell to base 7, discal band to v8.

a. Uph band straight. Unh markings clearly defined.

\* *elma albofasciata*, M. (25). Ceylon, S. India to Poona, Kangra. R.

β. Uph band angled. Unh markings suffused.

*elma litoralis*, Swin. Sind, Baluchistan. R.

I. 28. *Syrichtus*.—The Skippers. (Plate 31).

Above dark or greenish brown with numerous small white spots: unh greenish, yellowish or reddish brown with basal, central and sub-marginal series of spots or bands. Differs from *Hesperia* in that the apical spots upf in 4,5 are either absent or in continuation of the spots in 6-8 and in the presence of a more or less prominent row of sub-marginal spots.

I. 28. *Syrictus*.—The Skippers. (Plate 31)—*contd.*

1a (7a). Upf spot about mid cell well behind the origin of v3 and the discal spot in 2: spots in 1b consist of a spot under the spot in 2 and a short streak behind, above and parallel to v1. Uph never a discal spot in 7. ♂ no costal fold.

Sertorius Group.

1b (3a). Unh inner spot in 7 conjoined to spot base cell and continued to costa: outer spot in 7 conjoined via a spot base 6 to the large central spot in 4-5, thus forming a regular basal and central band. Upf spot end cell prominent. Unh greenish brown.

1 (2). Unh sub-marginal spots conjoined, thus making 3 bands, which are parallel. Upf sub-marginal spots faint and show only in the middle. Upf and uph no spot base cell, but upf with a spot base 2. Tegumen divided at tip instead of pointed as in rest of genus.

*zebra*, But. (25). The Zebra Skipper. W. Punjab. R. (= *hellas*, DeN).

2 (1). Unh sub-marginal spots separate. Upf sub-marginal spots prominent: a spot base cell, making 3 cell spots. Uph usually a spot base cell.

\* *galba*, F. (25). The Indian Skipper. Ceylon. India generally to Shan States. C. (= *superna*, M).

3a (1b). Unh spots in 7 separate: inner spot mid basal cell spot and central spot: outer spot in 7 near termen.

3b (6). Upf prominent spot end cell and usually a spot base cell upf and unf.

3 (4a). Upf no discal spots in 4, 5, spot end cell larger than spot in 3. Unh greenish brown, spot mid 7 midway between and quite separate from spot base cell and central spot, which latter is separate from the conjoined spot in 1c-2. A link between *galba* and *geron*.

*evanidus*, But. (23). The Sind Skipper. Sind, Mekran. R. (*adenensis*, But, Aden, of which *amenophis*, Rev, Heliopolis, is said to be a race, is allied to or conspecific with *evanidus*).

4a (3). Upf usual spots in 4, 5 and spot end cell smaller than spot in 3.

4 (5). Upf costa brown. Unh varies from pale greenish grey to tawny brown: inner spot in 7 usually quite separate from central cell spot and is midway between that and the spot base cell.

*geron*, Watson. (30-32). The Baluchi Skipper. Baluchistan, E. Persia, S. Afghanistan. C.

5 (4). Upf costa white. Unh greenish brown: inner spot in 7 conjoined to the central spot.

*phlomidis*. HS. (32-34). Greece to W. Persia and C. Asia. (*struvei*, Pungeler, E. Turkestan is a near ally).

6 (3b). Upf only a faint line end cell and no spot base cell or on uph.

a. Above sub-marginal spots prominent. Unh dark greenish brown to reddish brown: inner spot in 7 usually conjoined to central spot or nearly so.

*orbifer carnea*. Rev. (30-32). The Brick Skipper. Baluchistan above 7,000 ft. R. Type from Paghman Mts., Afghanistan.

β. Above sub-marginal spots very faint. Unh brick red: spot in 7 separate from central spot.

I. 28. *Syrictus*.—The Skippers. (Plate 31)—*contd.*

*orbifer lugens*, Stg., (29-31). Chitral over 10,000 ft. NR. Ferghana (*orbifer*, Hub, flies in E. Europe with a race *hilaris*, Stg, from Asia Minor: it is closely allied to *sertorius*, Hoff=*sao*, Hub, from C. and S. Europe, *ali*, Ob, from Algeria and *therapne*, Ramb, from Sardinia and Corsica).

7a (1a). Upf spot about mid cell nearer end cell, over origin v3 and usually over the spot in 2: usually 2 spots in 1b one above the other: only traces of a spot base cell (present uph): only faint line end cell. ♂ upf costal fold more or less developed.

7b (12a). Upf large white spot mid 7. Unh outer spot in 7 forms part of the sub-marginal series: inner spot forms part of central band. Above sub-marginal spots prominent.

Tessellum Group.

7c (9a). Upf one or two small white spots in 1b between the discal and sub-marginal spots. Unh inner spot in 7 continued to costa.

7 (8). Unh rather dark green. H tibiæ spinose.

*cribrellum*, Evers. (34). S. Russia to Turkestan and Amur. (= *hybrida*, Mab).

8 (7). Unh orange with broad white markings or better described as white with central and postdiscal black-edged orange bands. Above markings large and prominent. H tibiæ clothed with hairs.

*antonia*, Speyer. (34). Turkestan to Amur. (*gigantea*, Stg, is a large race, 40 mm, from Ferghana).

9a (7c). Upf no spots in 1b between the discal and sub-marginal series. Unh spot mid 7 not continued to costa, which is normally entirely white.

9 (10a). Unh practically entirely white, markings faint.

*nomas*, Led. (35). S. Russia, Asia Minor to Altai and W. China. NR.

10a (9). Unh yellowish green to greenish brown, markings prominent.

10 (11). Unh white central band broken in at v7.

*tessellum*, Hub. (35). Russia to Turkestan to W. China and Amur. NR. (*gigas*, Brem, large race from Amur: *protheon*, Ramb, S. Russia, more spotted: *lensææ*, Ob, Algeria, very pale below with small spots).

11 (10). Unh white central band not broken in at v7, regular.

*nobilis*, Stg. (35). Turkestan. (races are *fucata*, Mab, Tian Shan: *kuenlunus*, GG, Kuen Lun Mts.).

12a (7b). Upf no large white spot mid 7. Unh outer spot in 7 quite distinct from the sub-marginal series, further from termen: inner spot not continued to costa. Above sub-marginal spots faint.

Proto Group.

12b (16a). ♂ with costal fold obsolete. Unh greenish: central spot situated midway between the two spots in 7.

12c (15). Unh spot mid 7 smaller than the central spot 4-5.

12 (13a). Upf discal spots large and nearly conjoined: apical spots completely conjoined. Below sub-marginal spots hardly traceable: Unh central spot 4-5 prolonged as a streak towards termen.

I. 28. *Syrichtus*.—The Skippers. (Plate 31)—*contd.*

*plurimacula*, Christoph. (30). The Streak Skipper. Baluchistan, Persia, Mesopotamia. NR.

13a (12). Upf discal spots small and separate: apical spots separated by veins. Below sub-marginal spots distinct: unh central spot not prolonged, outer edge straight.

13 (14). Above overlaid grey scaling. Unh sub-marginal spots conjoined.

*poggei*, Led. (35). The Syrian Skipper. Asia Minor.

14 (13). Above not overlaid grey scales. Unh sub-marginal spots separate.

*lutulentus*, Mab. (35). Turkestan.

15 (12c). Unh spot mid 7 as large as the central cell spot. Upf all spots large, grey scaling prominent. Unh submarginal spots small and separate.

*ioan*, Warren. (35). Asia Minor, Tian Shan.

16a (12b). ♂ with costal fold prominent. Unh reddish: inner spot in 7 approximate to spot base cell and outer spot over central spot in 4-5.

16 (17). Unh inner spot in 7 immediately over basal cell spot and outer spot nearer base than central spot.

*proto*, Esp. (33). S. Europe and N. Africa to Persia, Turkestan. (*mahomed* and *ahmed*, Ob, are allied species from Algeria).

17 (16). Unh spots in 7 further from the base.

*staudingeri*, Esp. (33). Turkestan. (The identity as species, races, or varieties requires clearing up of *proteus*, Stg: *epime-theus*, Mab: *prometheus*, GG and *albata*, Reverdin, all from Turkestan).

I. 29. *Hesperia*.—The Skippers. (Plate 31).

Similar species to *Syrichtus*, but upf the spot in 5 is always present and the spot in 4 usually, being differently placed, shifted out towards the termen well beyond the spots in 6-8. The sub-marginal spots are absent or faint and incomplete. Upf and uph no spot base cell and usually only a faint streak at end cell.

1a (13a). Unh extreme base 7 dark, followed by a pale spot near the base and a spot over the central spot in 4-5: neither spot continued to the costa, which may be entirely pale.

1b (3a). Upf a spot end cell and before the middle in 1b, more sharply defined than the other spots; spot mid cell well behind the origin of v3; 2 equal white streaks one above the other over the cell spot. Unh spot near base 7 small circular, not, or only just, touching the scv; origin v6 nearer outer than inner spot in 7; upper edge of spot in 5 produced into cell; submarginal spots irregular. Uph spots sharply defined and usually a spot in 7 and submarginal spots. Tegumen with horns near the base and clasp without the vertical spine characteristic of the rest of the genus.

Malvæ Group.

1 (2). Unh dark ochreous brown with small well defined spots: dorsum dark brown.



I. 29. *Hesperia*.—The Skippers. (Plate 31)—*contd.*

*malvæ*, L. (25). Europe to Amur, China. (allied species are *malvoides*, El and Ed, S. Europe: *pontica*, Rev, Amasia).

2 (1). Unh pale ochreous green, with broad ill defined markings: dorsum broadly white.

*melotis*, Dupon. (30). Island of Milo, Asia Minor. (= *hypoleucos*, Led).

3a (1b). Upf spot end cell and before the middle in 1b never so sharply marked as the rest of the spots and often one or both are absent. Unh inner spot in 7 always reaches the scv and is never circular.

3b (8a). Unh upper edge of spot in 5 not entering cell: inner edges spots end cell, base 6, mid cell in a straight line.

*Alveus* Group.

3c (7). Upf at most a small spot before the middle in 1b and none in base 2; discal spots in 2 and 3 not overlapping.

3d (6). Unh always spots at bases of 2 and 3.

3 (4a). Unh upper edge of spot in 5 not continued along v6: outer edge of spot base cell against centre of spot in 7.

*serratulæ*, Ramb. (35). Europe to Syria, Turkestan and N. Asia. (*alveoides*, Stg, is the Syrian race and *major*, Stg, from Taurus, Pontus and Turkestan. *onopordi*, Ramb, is an allied species confined to Europe and N. Africa).

4a (3). Unh upper edge of spot in 5 continued along v6 towards the margin.

4 (5). Unh submarginal spot in 2 further from the margin, midway between basal and sub-marginal spot in 3.

*alveus*, Hub. (35). Europe to Amur and W. China. (*sifanicus*, GG, is the race from W. Asia: *schansiensis* and *kansuensis*, Reverdin, China and Kansu, are races or allied species. *fritillum*, Hub, Europe to N. Africa and *numida*, Ob, Atlas Mts, are allied species).

5 (4). Unh sub-marginal spot in 2 nearer margin, against sub-marginal spot in 3. Unh dark yellowish green.

*armoricanus*, Ob. (35). Europe and N. Africa to Asia Minor and Persia. (*persica*, Rev, is the Eastern race. *foulquieri*, Ob, is an allied species from S. Europe).\*

6 (3d). Unh discal spots at bases 2 and 3 absent: upper edge spot in 6 continued along v6 towards termen. Above spots very small: uph unmarked: unh dark yellowish green.

*speyeri*, Stg. (30). Amur. (*seitzi*, Mab, the race from Sajon is unmarked above. *carlinæ*, Ramb, is an allied species from C. Europe).

7 (3c). Upf spot near base 1b large, across the interspace, and an elongate spot at base of 2 above it: discal spots in 2 and 3 overlap. Unh yellowish green, spots faint, but present at bases of 2 and 3: upper edge of spot in 5 continued along v6. Unf black.

*cinaræ*, Ramb. (35). SE. Europe to Asia Minor and Turkestan. (*reverdini*, Ob, Ta tsien Lou, is a race or allied species).

8a (3b). Unh upper edge of spot in 5 continued into cell more or less markedly: inner edges of spots in 4-5, base 6 and mid 7 not in line.

*Sidæ* Group.



I. 29. *Hesperia*.—The Skippers. (Plate 31)—*contd.*

8b (11a). Unh spots at bases cell and 7 do not overlap.

8 (9a). Unh sub-marginal spots in 1c and 2 small, not directed to the spot end cell. Below blackish, frosted white hairs.

*centaureæ*, Ramb. (35). N. Europe to Altai. N. America. (allied species are *freijs*, Warren, N. Europe and N. America: *sibirica*, Rev, S. Siberia to Altai: *chapmani*, Warren, S. Siberia, Sajan and Lake Baikal).

9a (8). Unh sub-marginal spots in 1c and 2 very enlarged and directed to spot end cell.

9 (10). Upf single (rarely double) streak on the costa, but forward of the cell spot: discal spot in 2 not nearer to the cell spot than to the spot in 3. Unh inner spots in 1b elongate and prominent. Above markings small.

*cacaliæ*, Ramb. (35). C. Europe. Altai. (*andromedæ*, Wallgr, is an allied species from C. Europe).

10 (9). Upf a double streak on the costa immediately over the cell spot: discal spot in 2 nearer to the cell spot than to the spot in 3. Above very dark with prominent spots. Unh dark ochreous brown or greenish with very broad white markings.

a. Upf prominent pale markings on disc and about tornus.

\**alpina alpina*, Ersch. (25-30). The Mountain Skipper. Chitral to Kashmir, 10,000 ft. NR. Turkestan. (= *darwasica*, GG).

β. Upf often unmarked or pale markings reduced.

*alpina cashmirensis*, M. Kashmir, 10,000 ft. NR.

11a (8b). Unh spots base cell and 7 overlap.

11 (12). Unh conspicuous yellow or orange black edged bands. *sida*, Esp. (30-35). S. Europe to W. Asia.

12 (11). Unh greenish or yellow brown with white markings not black edged.

*carthami*, Hub. (30-35). Europe to W. Asia.

13a (1a). Unh extreme base 7 white forming part of a basal white band. Upf spot in cell behind the origin of v3: usually prominent spots in 2 and in 1c below it.

Maculatus Group.

13b (15a). Unh a Y-shaped basal ferruginous band from v1 across cell, the right stalk to the costa, left to v8, stalks separated by the sub-basal white spot in 7.

13 (14). Unf black. Unh central white band, very irregular large spot in 1c, small spot base 2, none base 3, spot in 4-5 large and quadrate, spot base 6 absent, spot in 7 large and expanding to the white costa; ferruginous postdiscal band and sub-marginal spots very irregular, sub-marginal spot enlarged in 1c and 2.

*bieti*, Ob. (30). W. China and E. Thibet.

14 (13). Unh central white band of equal width, except for the spot in 5, which is expanded inwards and outwards; ferruginous postdiscal band also regular and followed by a pale brown broad marginal band, with small irregular spots on its inner edge. Unf overlaid white scales. Apex F produced and margin straight.

*oberthuri*, Lecch. (25-30). The Thibetan Skipper. Chumbi Valley, E. Thibet, W. China and Yunnan. R. (= *delavayi*, Ob).

15a (13b). Unh a roughly oval-shaped ferruginous band (sub basal), enclosing a small white spot in 7 (may be absent). Unf

I. 29. *Hesperia*.—The Skippers. (Plate 31)—*contd.*

black apex prominent (may be overlaid white scales). Unh narrow silver white discal band, expanding to large white patch on the costa.

15 (16). Uph only central white spots (often obscure). Above cilia dark, only faintly chequered. Upf spots in 4 and 5 very small and separate. Unh beyond discal band pale brown with dark ferruginous central band. Very variable.

*zona*, Mab. (30). Japan to W. China. (= *sinicus*, But and *albistriga*, Mab).

16 (15). Uph with prominent discal and sub-marginal spots. Above cilia prominently chequered. Upf spots in 4 and 5 usually conjoined. Uph discal spots end in a very broad white costal spot.

a. Unh dark and uniform; discal pale band very narrow and beyond uniform dark.

*maculatus maculatus*, Br. and Gr. (30). Japan to W. China. (= *amurensis*, Stg).

β. Unh much paler; sub-basal ferruginous band sharply marked; beyond the silver discal band pale ochreous brown and a second silver postdiscal band thereon. Unf apex may be white scaled.

*maculatus thibetanus*, Ob. E. Thibet and W. China.

(I have been unable to place *dejeani*, Ob, W. China and *iliensis*, Reverdin, Ili, Turkestan.)

I. 30. *Carcharodus*.—The Marbled Skippers. (Plate 31).

Above greenish brown; upf paler with a broad dark band before the middle and a similar postdiscal band; hyaline white spots in cell, discal in 2 and 3, apical in 6-8; uph uniformly dark with rather obscure small pale spots in cell and discal and sub-marginal rows. Unh marked as in *Hesperia*; in 7 a pale spot on either side of the discal band; ground colour yellow brown.

1a (3a). ♂ unf a tuft of hairs from near base vl on dorsum.

1 (2). Uph and unh spots comparatively large and diffused. Unh dark area between discal and sub-marginal pale bands narrower than the discal band. Below paler, greenish grey.

a. Larger and darker. Unh spots diffused.

*altheæ dravira*, M. (35). The Tufted Marble Skipper. Chitral and Kashmir. R. (*altheæ*, Hub, occurs typically in C. and S. Europe with race *orientalis*, Reverdin, flying from Turkey to W. Asia).

β. Smaller. Above paler and more variegated: upf veins pale. Unh markings narrower and much more sharply defined.

*altheæ baluchā*, nov. (29-32). Baluchistan. NR. (*stauderi* and *ramses*, Reverdin, are allied species from Algeria, Syria and Alexandria).

2 (1). Uph and unh spots small and sharply defined; unh dark area between the pale bands broader than the discal band. Smaller and lighter.

*boeticus*, Ramb. (35). S. Europe to Syria. (= *marrubii*, HS).

3a (1a). ♂ unf no tuft. Above and below spots smaller. Above browner with more or less violet reflections.

I. 30. *Carcharodus*.—The Marbled Skippers. (Plate 31)—*contd.*

3 (4). Upf spot in 2 wider than high.

*lavatharæ*, Esp. (30). S. Europe to Asia Minor.

4 (3). Upf spot in 2 higher than wide.

*a.* More uniform brown above. Below brown.

*alceæ alceæ*, Esp. (30). The Plain Marble Skipper. C. and S. Europe to W. and C. Asia. Chitral. Kashmir to Murree Galis. NR. •

*β.* Much more variegated above, ground colour paler, bands darker, with violet grey hairs, veins paler. Unh greenish brown with pale veins.

\**alceæ swinhoei*, Watson. Baluchistan. S. Afghanistan. C.

I. 31. *Erynnis*.—The Dingy Skippers. (Plate 31).

Above dark brown, marbled on F with ashy bands; no hyaline spots other than the apical spots in 6-8, which may be absent. Cilia dusky.

1a (4a). ♂ with a costal fold. Uph with postdiscal and terminal pale spots.

1b (3). Upf no terminal pale spots. Uph spots yellow, comparatively large and prominent; a spot end cell. Unf a yellow spot end cell and postdiscal and terminal spots.

1 (2). Large. Upf yellow postdiscal spots suffused, irregular. Upf ashy central band broad=width of space 2.

*montanus*, Br. (40). Japan to C. China. (= *rusticanus*, But.).

2 (1). Small. Unf pale postdiscal spots regular, well defined. Upf ashy central band narrow= $\frac{1}{2}$  width space 2.

*nigrescens*, Leech. (35). W. China and E. Thibet (= *leechi*, El and Ed).

3 (1b). Upf with small terminal spots. Uph spots small, whitish and obscure. Unf outwardly paler and spotless. Below pale brown.

*tages*, L. (30). Europe to Amur. (Asiatic races are: *popovianna*, Nord=*sinina*, GG, Dauria, Amur, China: *unicolor*, Freyer, Asia Minor to Mesopotamia).

4a (1a). ♂ no costal fold. Upf and uph unmarked except for the ashy bands and apical spots.

4 (5). Inky black, very uniform; apical spots prominent.

\**marloyi*, Bdv. (30). The Inky Skipper. S. E. Europe to Persia, Baluchistan, Turkistan and Chitral. NR. (= *sericea*, Frey and *rustan*, Koll).

5 (4). Larger, paler, upf with the ashy bands better marked and the apical spots faint. Unh with traces of postdiscal spots. Cilia greyer.

*pelias*, Leech. (35). W. China and E. Thibet. (= *erebus*, Groum).

I. 32. *Aubertia*.—The Mountain Hoppers. (Plate 31).

Above with prominent white or yellow spots on both wings or yellow with black spots. Unh with prominent yellow or silver markings.

I. 32. *Aubertia*.—The Mountain Hoppers. (Plate 31)—*contd.*

1a (4a). Unh with yellow markings.

*Palæmon* Group.

1b (3). Uph always yellow sub-marginal spot in 6.

1 (2). Upf veins black on yellow areas. Above black with numerous yellow spots. Unf mostly yellow. Unh ochreous with black edged yellow spots and black veins at margin.

*palæmon*, Pallas. (30). Europe to Amur and N. America. (= *paniscus*, F and *brontes*, Schiff. race *murasei*, Matsum, S. Sachalin and var. *satakei*, Matsum, Japan).

2 (1). Upf veins not black. ♂ upf mostly yellow or orange with black markings and ♀ black with broad yellow markings.

a. ♂ yellow with large black spots mid cell, end cell, base 2, mid 1b and sub-marginal row. ♀ discal dark markings conjoined, base and margin broadly dark. Unh as *palæmon*.

*silvius silvius*, Knoch. (30). The Northern Hopper. N. Europe to Amur. (Races *isshikii* and *shikotanus*, Matsum, Sachalin and Kurile Is. : ab *doi*, Kurile).

β. Orange above with broader dark markings. ♂ upf sub-marginal spots to termen and spot end cell to costa: ♀ no sub-marginal yellow spots. Unh mostly yellow with few black markings.

*silvius houangty*, Ob. W. China.

γ. Orange markings still more reduced. ♂ upf centre cell spot conjoined to spots in 1b and 2: ♀ spots in 4 and 5 detached. Uph no yellow suffusion. Unh suffused greenish yellow.

*silvius shoaka*, Evans. S. E. Thibet. Bhutan 10,000 ft. R.

3 (1b). Uph no yellow sub-marginal spot in 6: large spots mid cell, in 2 and 4-5. Upf dark brown with broad conjoined yellow spots. Unh greenish ashy, extra spot mid 7.

*abax*, Ob. (30). W. China.

4a (1a). Unh with silver markings.

*Argyrostigma* Group.

4b (6a). Uph with sub-marginal yellow spot in 6. Above dark brown with yellow spots.

4 (5). Unh transverse silver streak from base through cell to margin in 5, streak in 1b, dot in 2 and sub-marginal series. Above with small yellow markings as in *Taractrocera*: uph with sub-marginal spots, large spot end cell and another below it.

*pulchra*, Leech. (25). W. China to N.E. Thibet. (= *ops.*, GG).

5 (4). Unh no transverse streak.

a. Upf basal yellow costal streak, spot mid cell conjoined to spot base 2, extending into 1b, spot end cell extending to costa, irregular lower discal band 1b to 3, subapical band 4-8 and narrow band near apex in 6-7. Uph spot mid cell, central band 1c to end cell and sub-marginal spots. Unh ferruginous with silver markings corresponding to the yellow markings uph, except that the central band extends to mid costa.

*argyrostigma argyrostigma*, Evers. (25-30). The Orange and Silver Hopper. Amur, Altai, Mongolia, N. Thibet (Tatung, Amdo).

β. Upf no costal basal streak, spot mid cell extending to costa, but no spot base 2: spot end cell conjoined to discal band in 2:

I. 32. *Aubertia*.—The Mountain Hoppers. (Plate 31)—*contd.*

apical band absent. Uph large central yellow spot from 2 to end cell and single sub-marginal spot in 6. Unh as last, but no cell spot.

*argyrostigma flavostigma*, Ob. W. China.

γ. Upf spots smaller, yellowish white. Uph additional sub-marginal spot in 5. Unf apex tinged chocolate brown instead of yellow. Unh as in α, sub-marginal spots extend into 1c.

*argyrostigma montana*, South. Litang 10,000 ft.

δ. Upf as β, but spot base cell not to costa, conjoined to spot in 2—1b.: discal yellow markings very broad, conjoined to sub-apical spots and to spot end cell. Uph as β, centre spot narrower. Unh ferruginous yellow, dorsum pale and silvery at base 1b, large central silver spot exactly as the yellow spot above with a spot in cell and mid 7 above the inner edge of the central spot.

*argyrostigma avanti*, DeN. Chumbi Valley Sikkim, Kumaon interior. VR.

6a (4b). Upf no sub-marginal spots. Above pale spots small. Uph single spot end cell and spot below which may be conjoined. Unh always a silver spot in the cell and central band from 1b to costa, usually a sub-marginal band.

6b (8a). Upf spot near end cell well behind spot in 2: spots white.

6 (7). Upf single spot in 1b immediately under spot in 2, no spot base cell or white at apex, dot in 3, contiguous dashes in 4 to 8. Uph spot end cell unusually large, conjoined to spot below. Unf obscure white dash at apex, obscure line on dcu. Unh central band much curved, compact, even-edged: outer band continuous, narrow and straight, leaving broad ferruginous area about apex and upper part of termen.

*micio*, Ob. (25). W. China and E. Thibet.

7 (6). Upf single spot in 1b against v1, may be a dot below spot in 2: spot base cell, separate dot in 3, apical spots in 4, 5 usually separate from those in 6 to 8. Unh inner band more irregular, outer band broader and nearer margin.

α. Spots in cell less developed.

*dieckmanni dieckmanni*, Græser. (25-30). The Silver Mountain Hopper. Amur.

β. Upf prominently white at apex: spots in 1b prominent. Unh inner edge of discal band very irregular: outer band very irregular, portion in 4-5 very narrow. Uph spot below spot end cell behind it instead of directly under it as in other races.

*dieckmanni dulcis*, Ob. Amdo. Kukunor.

γ. Upf as last but spots in 1b small, upper one minute or absent. Unh inner edge of central band regular: outer band more regular.

*dieckmanni gemmata*, Leech. W. China. (= *demea*, Ob and ab. *demea-plutus*, Ob).

δ. Markings much reduced: upf no white at apex and spot base cell obscure. Unh sub-marginal band very narrow in 4-5.

*dieckmanni minor*, nov. Pochu Valley, E. Thibet.

η. Smaller with broad markings: upf white at apex broader than in other races, spots in 4-5 touching those in 6-8. Unh prominent silver streak from base in 1b, central band as in *gemmata*



I. 32. *Aubertia*.—The Mountain Hoppers. (Plate 31)—*contd.*

but narrow posteriorly, outer band narrow, protruded inward in 6, but less so or not at all in 3.

\**dieckmanni watsoni*, nov. Fort White, Chin Hills, Burma. R.

8a (6b). Upf spot near end cell immediately over spot in 2.

8 (9a). Upf a spot base cell and another in costa above it. Unf no spot across 1b.

α. Upf spots large, dot in 3, upper dot in 1b, spots in 4-5 touching those in 6-8. Uph large conjoined spot in cell and 2. Unf white streak base costa, apex white in 6-7. Unh white spot base costa and basal streak in 1b: centre band broad, continuous and compact: outer band broad but only dots in 4 and 5: cilia white.

*christophi christophi*, G.G. (25-30). Sinin Shan Mts. Amdo, Kukuror.

β. Markings much reduced. Upf no white at apex. Uph narrow streak end cell and obscure dot in 2 behind it. Unf apical markings in 6, 7 yellow. Unh central band narrow and macular, particularly in 1c and 2, sub-marginal markings narrower and cilia dark.

*christophi tibetanus*, South S.E. Thibet.

9a (8). Upf no basal pale spot on costa, but there may be an obscure spot base cell. Uph spot end cell and base 2 separate. Unh central band macular posteriorly: sub-marginal band incomplete in 4-5.

9 (10). ♂ above markings white and broad, apex upf white-tipped, no spot base cell, upper spot in 1b against spot in 2, may be a dot in 3. ♀ spots may be yellow and may be a spot base cell. Unf spot in 2 continued to v1. Unh upper part central band compact: spot in 8 white.

*niveomaculatus*, Ob. (30). W. China. E. Thibet. (may be conspecific with *christophi*).

10 (9). Above markings narrow and yellow. Upf a spot base cell.

α. Upf if a spot is present in 1b, it is beyond the spot in 2 and detached. Unf spot in 1b oblique and beyond spot in 2. Unh central band entirely macular and upper spot in 8 yellow.

*flavomaculatus flavomaculatus*, Ob. (30-35). W. China. E. Thibet. Kukuror.

β. Upf base sprinkled yellowish grey scales, spot in 1b against spot in 2, a spot present in 4 as well as in 5. Uph no spot base 2. Unf spots white. Unh only white spot mid cell, long silver spot end cell, white point below: 4 silver sub-marginal spots, 2 near apex and 2 below middle, followed by white marks on termen.

*flavomaculatus postnigra*, South. Batang, E. Thibet, 12,000 ft.

I. 33. *Leptalina*.

Above unmarked dark velvet brown. Unf black, apex broadly, costa and termen narrowly, ochreous. Unh ochreous, veins paler, a silver band from base cell to termen in 4-5 and a similar more obscure streak in 1c. Wings very elongate and body very long.

*unicolor*, Br. and Gr. (35). Amur to C. China. Japan. (*v. ornatus*, Brem. has the stripe unh which typical *unicolor* lacks).



I. 34. *Heteropterus*.

Above dark brown with non-hyaline pale yellow spots: upf discal in 2, 3, apical in 6-8 and beyond in 5: uph plain in ♂, with discal spots in ♀. Unf dark brown, yellow intra-nervular streaks about upper half of termen. Unh yellow with numerous black-ringed white spots, large and prominent.

*morpheus*, Pallas. (40). Europe to Korea and Japan. (= *sterope*, Schiff. ? race *coreana*, Matsum, Mt. Hakuto, Korea. abs., *obsoleta*, Fritsch: *radiata*, Kolisko: *phantasos*, Stich).

I. 35. *Isoteinon*.

Above dark brown, bases clothed ochreous green hairs: cilia whitish, obscurely chequered on F. Upf prominent quadrate hyaline white spots, end cell and in 2 with inner edges in line, small upper and large lower spot in 1b, spot in 3 and apical in 6-8. Uph plain. Unf dark brown, costa and apex dark ochreous. Unh dark ochreous, with prominent black-edged white spots, end cell, bases 1c and 7, discal row 1c to 7.

*lamprospilus*, Fd. (40). C. China to Tonkin. (races *vitrea*, Murray, Japan: *formosanus*, Fruh, Formosa).

I. 36. *Chitralia*.—Leslie's Hopper.

Above dull dark brown; cilia whitish. Upf non-hyaline small whitish spots, discal in 2 and 3 (often absent in ♂) apical in 6, 7 and sometimes in 8. Uph plain. Unf brown broadly overlaid whitish scales along costa and apex. Unh brown, entirely frosted whitish scales, giving a dull frosted appearance. In the ♀ the spots on F are larger and unh there is a white spot mid 5. Antennæ prominently chequered brown and white. Very like *Eogenes alcides*.

*lesliei*, Evans. (30-35). Chitral at low elevations in May to July. NR.

I. 37. *Barca*.

Above dark velvet brown. Upf broad yellow band from costa through end cell to tornus. Unh a straight narrow yellow band from costa just before apex to termen in 1c. Wings broad.

*bicolor*, Ob. (45). E. Thibet.

I. 38. *Apostictopterus*.—The Giant Hopper. (Plate 31).

Above and below dark chocolate brown, unmarked. Cilia dark brown. Wings very elongate.

\* *fuliginosus*, Leech. (65). Manipur and Naga Hills. W. China. VR. (= *curiosa*, Swin).

I. 39. *Astictopterus*.—The Forest Hopper. (Plate 31).

Dark velvet brown, normally with small hyaline white apical spots upf and unh more or less grey or ferruginous with obscure dark bands.

a. Apical spots separate. Unf apex and unh margin and centre grey scaled on a dark ochreous brown ground. Unh broad dark obscure discal band and spot in cell.

*jama chinensis*, Leech. (35). C. and W. China, Hongkong. (= *nubilus*, Mab).

β. DSF. F more pointed than usual. Upf 3 conjoined apical spots, very broad in ♀. Below grey scaling more prominent than usual: unh broad dark discal band and basal area. WSF? as next.

*jama mercara*, nov. (29-34). Coorg. R.

γ. WSF ♂ no spots upf: ♀ 2 or 3 separate apical spots. Below very uniform dark brown with a pinkish gloss and hardly any grey scaling. Unh discal band narrow, irregular, obscure: may be pale spots formed by the grey scales in 3, 4, 6 and obscure dark spot in cell, base and mid 7.

*jama olivascens*, M. (38-40). Kumaon to Karens, Siam. NR.

δ. DSF ♂ upf 2 apical spots, in ♀ 3 conjoined. Unh pale brown with very irregular dark discal band and prominent spots in cell, base and mid 7.

\* *jama kada*, Swin. (30-36). Kumaon to Karens, Siam. NR.

η. WSF as *olivascens* but larger.

*jama permagnus*, Fruh. (40-46). Andamans, Malaya, Tonkin, Hainan. R. (= *quadripunctata*, Swin).

ξ. DSF as *kada*, larger and darker. Unh considerable grey scaling and a tendency to form pale spots in 3, 4, 6.

*jama henrici*, Holland. (38-42). Dawnas, Tonkin, Hainan, Philippines. R. (= *unicolor*, Mab: *tonkinianus*, Fruh).

ε. Small dark form with very obscurely marked unh and usually no apical spots F.

*jama jama*, Fd. (30-40). S. Burma, Malaya, Sumatra, Nias, Borneo. (= *fuligo* Mab: *melania*, Plotz).

I. 40. *Ochus*.—The Tiger Hopper. (Plate 31).

Above dark velvet brown. Cilia brown, chequered yellowish at apex F and H. Upf sub-apical non-hyaline yellow band 5-8, may be reduced or absent. Unf black, costa narrowly yellow and veins at apex yellow; sub-apical yellow band more extensive. Unh ochreous yellow with numerous sharply defined black streaks and spots.

\* *subvittatus*, M. (22-27). Kumaon to Dawnas. Tonkin. (= *subradiatus*, M and *intricatus*, Fruh).

I. 41. *Baracus*.—The Hedge Hoppers. (Plate 31).

1a (3). Above dark brown; upf usually with non-hyaline discal spots in 1b to 3, irregularly placed and decreasing apical spots in 6-8 (rarely outer conjoined dot in 5); uph plain and cilia dusky

I. 41. Baracus.—The Hedge Hoppers. (Plate 31)—*contd.*

brown. Below costa and apex F and all H overlaid ochreous scales; rest of F black.

1 (2). Unh not brown spotted; a more or less prominent whitish or pale ochreous streak from base cell to mid termen.

a. ♂ above lower discal portion F up to discal markings and all H, except for costa and termen, very pale greyish ochreous; in ♀ dark brown, with the pale markings whitish. Unh dark ochreous brown, pale central streak prominent, whitish, and with pale streaks between veins at termen.

*vittatus vittatus*, Fd. (30-34). The Hedge Hopper. Ceylon. NR.

β. Above uniform dark brown; upf markings faint. Unh central streak prominent, whitish, also a pale streak along v1b; ground colour below brownish ochreous.

\**vittatus subditus*, M. Nilgiris and Palni Hills. NR.

γ. Above ochreous spots more prominent, especially in ♀. Unh bright ochreous, pale central streak pale ochreous and inconspicuous, also broad obscure streaks between veins.

*vittatus septentrionum*, WM and DeN. Assam to Dawnas, NR.

2 (1). Unf bright ochreous, profusely spotted dark ochreous brown; general appearance of alternating series of large ochreous and brown spots. Upf ochreous spots prominent, traces of a spot in the cell and some yellow scales on the costa. Unf ochreous area brown streaked between the veins.

*hampsoni*, El and Ed. (26-32). Hampson's Hedge Hopper. Coorg and N. Kanara, NR. (May be a low elevation race of *vittatus*; *subditus* appears to be confined to the plateaux and *hampsoni* to the low country).

3 (1a). Above pale blue, brown along apex and termen. Unh dark brown, clothed grey scales. Unmarked.

*plumbeola*, Fd. (24). Philippines.

## I. 42. Ampittia.—The Bush Hoppers. (Plate 31).

Above dark brown with non-hyaline markings F and H, yellow. Upf usually discal spots in 2 and 3, apical 6-8 and a spot in cell. Unh yellow with small black spots or dark brown with yellow spots.

1a (6). Unh yellow, more or less prominently black spotted. Uph never a yellow spot in the cell.

1b (5). Upf yellow spot in 1b absent or placed centrally under spot in 2.

1 (2a). Upf always a prominent spot in 1b against v1. Antennal club without apiculus. ♂ upf yellow markings very wide; entire cell and costa yellow to beyond middle, extending into bases of 1b and 2; spot in 1b usually large; discal spots in 2 and 3 conjoined to a large patch; apical spots also form large patch and may be conjoined to the costal yellow area; narrow sub-marginal yellow fascia below the apex; uph with a broad yellow discal area, divided by dark veins and extending from 1b to 5 or 6, may be detached

1. 42. *Ampittia*.—The Bush Hoppers. (Plate 31)—*contd.*

sub-marginal spots in 5 and 6. ♀ very variable; normally dark brown with small yellow spots, on upf end cell, in 1b, 2 and 3 and conjoined apical in 6-8, on uph discal in 2 and 3 and sub-marginal in 5, but specimens occur with markings as wide as in the ♂. Unh yellow with ill-defined black spotting. ♂ brand upf prominent.

\* *dioscorides*, F. (22-28). The Bush Hopper. Ceylon, India, Burma, Siam, Shanghai, Tonkin, Malay Peninsular, Sumatra, Bali. C. (= *maro*, F, *camertes*, Hew and *palemonides*, Snell).

2a (1). Upf no spot in 1b against v1 (may be very faint in *virgata*). Antennal club with well-defined apiculus. Unh black spotting sharply defined.

2 (3a). Upf ♂ brand very prominent and extends below v1 nearly to the termen. ♂ upf yellow markings narrow; discal spots separate, apical conjoined; narrow basal streak along costa and often streaks between veins behind apical spots; lower edge cell spot continued along mv towards base; yellow suffusion on basal  $\frac{1}{2}$  of 1b. Uph suffused discal spots in 2-3 and 4-5.

*virgata*, Leech, (30). C. China. R.

3a (2). Upf ♂ brand absent or small, circular, obscure.

3 (4). Upf conjoined discal spots in 2-3, conjoined apical 6-8, elongated spots one above the other mid cell and a streak on costa over the outer end of the upper spot. Uph prominent discal spot in 4-5 at the end cell and suffused spot in 2-3 below. No ♂ brand.

*trimacula*, Leech. (22-25). W. China. Szechuan. (ab. *reducta*, Draeseke).

4 (3). Upf markings broad as in *dioscorides*; cell and costa entirely yellow, but not extending at base below cell and not joining the apical patch along the costa. Uph large suffused discal patch 2-5. Cilia H entirely yellow, ♂ with obscure brand.

*maroides*, DeN. (22-25). The Scarce Bush Hopper. Assam to Dawnas. R.

5 (1b). Upf always a small spot in 1b against v1, but this spot is placed well behind the discal spots in 2-3, which are small and separate; double spot in cell, lower part longer; separate apical spots 6-8. Uph small spots in 2 and 3 or only in 3. Unh entirely yellow, black spotting absent or very sparse. Cilia H pale yellow. No ♂ brand.

*maga*, Leech. (30). C. China. Malay Peninsula (Arizan, Ozaki, 2 ♀ F.M.S. Coll). (= ? *myakei* and *arisana*, Matsum and *formosana*, Fruh, Formosa: *etura*, Mab, Hongkong).

6 (1a). Unh dark brown with prominent yellow spots in cell and bases 1b and 7, discal and sub-marginal series.

a. Small. Above spots obscure or absent on F and absent on H. Below dark and the spots small.

*dalailama nanus*, Leech. (22). China, Ichang and Ningpo.

β. Larger. Upf prominent triangular spot before end cell, discal spots in 2 and 3 close together and apical 6-8. Uph discal row 2-5.

*dalailama dalailama*, Mab. (30). W. China, Thibet. (= *lyde*, Leech).

I. 43. *Æromachus*.—The Scrub Hoppers. (Plate 31).

Small dark brown skippers with a discal and sub-marginal row of small pale spots below, of which the discal row may show upf.

1a (9a). Antennal club with a small apiculus.

1b (3a). Unh a purple discal band and some purple scales in the cell, also at the tornus and unf at apex. Above unmarked.

1 (2). ♂ with broad black brand upf from mid 1b to base 3. Below the markings broad diffused.

*catocyanea*, Mab. (25-30). E. Thibet.

2 (1). ♂ upf brand a small fold mid v1. Below spots rather obscure. Apex F produced in ♂.

*kali*, DeN. (25-30). The Blue-spotted Scrub Hopper. Sikkim to N. Shan States. R.

3a (1b). Below the spots yellowish white.

3b (6a). Below the veins pale on outer half unh and at apex unf.

3 (4a). ♂ upf brand consists of a small pale streak mid v1 and a dot base v2. Upf discal spots on a regular curve.

a. Unh greenish brown with 2 rows small white spots (discal and sub-marginal), a dark spot in the cell surmounted by a pale spot and above it a pale spot in 7.

*inachus inachus*, Mén. (28-30). Japan. Amur.

β. Unh bluish glossed, markings nearly obsolete.

*inachus propinquans*, Alph. Wa-ssu-kow, Chow-pin-sa, China.

4a (3). ♂ upf brand consists of a seam from mid v1 to base v3.

4 (5). Apex F pointed. Unh very like *inachus*, but the pale bands converge apically: the basal area is normally unmarked, but there may be a large black spot in the cell and a small pale spot at the extreme base of 7.

\**stigmata*, M. (22-30). The Veined Scrub Hopper. Murree to Karens. NR.

5 (4). Apex F rounded. Unh very prominent black markings between the 2 rows of pale spots.

a. Unh markings well developed.

*chinensis chinensis*, El and Ed. (28). W. China. (?=*thibetanus*, Aust).

β. Unh markings nearly obsolete.

*chinensis tali*, nov. Tali, Haut Yunnan.

6a (3b). Below veins not pale.

6 (7a). ♂ upf brand from v1 to v3.

*piceus*, Leech. (21). E. Thibet.

7a (6). ♂ upf no brand beyond an obscure pale fold mid v1.

7 (8). Unh dark ochreous brown, with obscure ochreous spots, the sub-marginal series extending to the termen along the veins, no well-marked terminal line: discal spots larger than the sub-marginal.

*dubius*, El and Ed. (22-28). The Dingy Scrub Hopper. Palni and Travancore Hills. NR.

8 (7). Unh sub-marginal spots not extending to the termen, terminal pale line distinct.

a. Unh discal spots larger than the sub-marginal: ground colour bright greenish ochreous, spots white.

*discreta jhora*, DeN. (22-28). The Grey Scrub Hopper. Sikkim. R.



I. 43. *Æromachus*.—The Scrub Hoppers. (Plate 31)—*contd.*

β. Unh discal and sub-marginal spots equal: ground colour greyer, spots dingier.

*discreta discreta*, Plotz. Assam to Burma. Tonkin. Malaya. Sumatra. NR. (*javanicus*, El and Ed is the Javan race, with the markings unf very obscure).

9a (1a). Antennal club without apiculus. Small, wings rounded. Below markings obscure: unh overlaid grey scales.

9 (10). ♂ upf no brand.

*pygmæus*, F. (20-22). The Pigmy Scrub Hopper. S. India. Assam to Burma. Malaya. Sumatra. NR. (= *indistincta* and *obsoleta*, M).

10 (9). ♂ upf with a brand from vl-v3.

*musca*, Mab. Luzon, Philippines.

I. 44. *Pedestes*.—The Bush Bobs. (Plate 31).

Above with hyaline spots on F only.

1a (4). Upf spot across cell, spot in 3 and larger one in 2 running below the first two: apical spots 6-8.

1b (3). Upf discal spots large, to bases 2 and 3.

1 (2). Above blue black: spots white. Below costa and apex F and all H overlaid olive ochreous scales. Unh small white discal spots in 2 and 3.

*\*masuriensis*, DeN. (30-32). The Mussoorie Bush Bob. Kulu to Assam. NR.

2 (1). Above dark brown, spots yellow: central apical spot pushed in.

a Unh black.

*parnaca parnaca*, Fruh. (34). Tonkin.

β. Unh (and apex and costa unf) ochreous: unh obscure ochreous spots in 2, 3.

*parnaca tali*, Swin. Tali, Haut Yunnan.

3 (1b). Above dark brown, hyaline spots pale yellow, smaller, spot in 3 not to base 3. Below costa and apex F and all H overlaid ochreous scales. Unh unmarked, but faint traces of discal spots are sometimes visible. In a not infrequent variety the discal spots in 2 and 3 upf are widely separated from the cell spot.

*\*pandita*, DeN. (25-30). The brown Bush Bob. Sikkim to N. Shan States. NR.

4 (1a). Upf with 2 spots end cell, 3 discal, 3 apical. Unh dull red brown, several basal and a curved discal row of indistinct black spots.

*bononoides*, Druce. (34). Sarawak. (Not examined by me; placed by Druce in *Pedestes*, but position doubtful).

I. 45. *Arnetta*.—The Bobs. (Plate 31).

1a (3a). Above dark brown with small hyaline white spots upf, upper edge cell (may be absent in *vindhiana*), discal in 2 and 3 close together, apical 6-8 minute. Unh with more or less complete set of small white spots, discal row 1-7, base 7, mid cell, base 1c (double).



I. 45. *Arnetta*.—The Bobs. (Plate 31)—*contd.*

1 (2). ♂ unf no tuft. Unh ochreous brown to greenish ochreous, spots obscure.

\**vindhiana*. M. (25-32). The Vindhyan Bob. S. to C. India. NR. (= *nilgiriana* and *modesta*, M).

2 (1). ♂ unf with a tuft of black hairs mid dorsum and v1 distorted in middle. WSF (*atkinsoni*) unh dark brown, clothed dark ochreous scales with spots very prominent. DSF. (*subtestaceus*) pale to dark brick red more or less clothed whitish scales, spots small and sometimes incomplete.

\**atkinsoni*, M. (25-32). Atkinson's Bob. Sikkim to Tavoy. NR. (= *subtestaceus* and *khasianus*, M).

3a (1a). Unmarked above and unh.

3 (4). Unf unmarked except for dorsum being paler. Above and unh dark rich brown. ♂ with black tuft unf and v1 distorted as in *atkinsoni*.

*kala*, Evans. (30). Sumatra. (Described from 1 ♂ of which the antennæ and palpi are missing, but the genitalia are very similar to *atkinsoni*; in general appearance the insect resembles *Itys iadera* and *Iambrix unicolor*).

4 (3). Unf with a conspicuous triangular apical orange yellow patch from 6-8. Unf costa and apex and unh very sparsely overlaid with conspicuous ochreous scales.

*verones*, Hew. (31). Sumatra. Malaya. Borneo.

I. 46. *Iambrix*.—The Bobs. (Plate 31).

Normally without hyaline spots except sometimes in the ♀ of *salsala* on upf and in *tytleri*.

1a (4a). Unh with small silver spots. ♂ no brand.

1 (2a). Upf with prominent pale yellow hyaline spots, large spot towards end cell, tapering towards scv, larger spot in 2 with its inner edge in line with the inner edge of the cell spot, may be a dot in 3, apical spots 6-8, non-hyaline spot in 1b against v1. Below costa and apex F and all H overlaid bright ferruginous ochreous scales; unf the spots white and the dorsum pale; unh prominent small silver spots in 2, 3, 5, 7 and cell, more or less black edged and some black streaks towards the margin.

*tytleri*, Evans. (28). Tytler's Bob. Naga Hills, Siam, Borneo. VR. (= *woolletti*. Riley).

2a (1). Upf no prominent hyaline spots (except ♀ *salsala* which never has a spot in the cell).

2 (3). Unh black edged silver spots in 1c, 5 and 7, that in 5 most prominent; rarely a faint spot in cell, but never so prominent as the spot in 5; spots in 1c and 7 often faint or absent. Above dark brown with some dark ochreous scaling on F, which in ♂ forms a more or less apparent series of discal spots; in ♀ these spots are more or less replaced by a non-hyaline spot in 1b and a series of hyaline spots in 2-8, bent in at v6. Unf costa and apex and all unh densely clothed ferruginous ochreous scales; unf in ♂ a more or less prominent silver spot end cell against upper edge and two small discal spots in 4 and 5.

I. 46. *Iambrix*.—The Bobs. (Plate 31)—*contd.*

*a.* Smaller. Upf ♂ only ochreous spots in 1b and 2.  
*salsala luteipalpus*, Plotz. (26-30). The Chestnut Bob. Ceylon.  
 South India. C.

*β.* Larger. Upf very variable, but usually discal spots in 1b and 2 are obscure, those in 3-6 being more conspicuous.

\**salsala salsala*, M. Sikkim to Burma, China, Siam, Malay Peninsular and Islands. C. (= *vasuba*, Fruh, Tonkin).

3 (2). Unh normally with small silver spots in 1c (double), 2, 5 and mid cell, the spot in cell as prominent as the spot in 5. Above much darker velvet brown, very little ochreous scaling about apex F and no formed spots. Unf costa and apex and all unh, overlaid dark ochreous: unf silver cell spot present, spots in 4 and 5 usually absent.

*stellifer*, But. (24-28). The Malay Chestnut Bob. Karens to South Burma. Annam, Malay Peninsular and Islands. Philippines. NR. (= *niasicus*, Fruh and *mergus*, Pl).

4a (1a). Unh unmarked. ♂ upf a glandular streak along 2nd quarter of v1 from base, the vein being slightly deflected.

4 (5a). Above unmarked dark velvet brown, paler in ♀. Below as above; unf lower discal area to dorsum paler.

*unicolor*, Dist. (31). Perak, Pahang, Malacca, Sarawak. R.

5a (4). Upf with red discal band. Below costa and apex F and all H overlaid dark ochreous scales. ♂ unf a thin tuft of hairs mid dorsum overlying a black and white brand in 1b; uph scales above cell to costa modified.

5 (6). Upf red band dull, narrow, appears composed of densely packed dark ochreous scales, does not extend into 1b and is wider than the dark termen.

*sindu*, Fd. (25-28). The Small Red Bob. South Mergui. VR. Malay Peninsular and Islands. NR. (= *obliquans*, Mab and *yamanta*, Fruh).

6 (5). Upf red band much broader, clearer and brighter, much broader than the dark terminal area and extends into 1b: in ♀ it extends into cell, the end of which is marked by a dark line.

*latifascia*, El and Ed. (27-30). Borneo. Sumatra (Fruh). Pahang (F.M.S. Museum).

I. 47. *Suastus*.—The Palm Bobs. (Plate 31).

Above dark brown, with or without hyaline spots F. Unh usually with dark spots.

1 (2a). Unh grey brown, overlaid greyish ochreous scales with a variable number of sharply defined black spots; spot against upper outer edge of cell always present and as large as any other spot; discal series 1c, 2, 3, 5 (usually absent) and 6. Upf hyaline white spots usually prominent, but may be small or absent; spot across cell beyond middle (lower part often absent), spot in 3 and large spot in 2 with its inner edge under the centre of the cell spot and its outer edge under the inner edge of the spot in 3; apical spots 6-8; usually non-hyaline lower spot in 1b and sometimes an upper

I. 47. *Suastus*.—The Palm Bobs. (Plate 31)—*contd.*

dot. Unf apex and costa grey and there may be some black spotting at apex. Cilia grey. Size very variable.

a. Much darker above and below dark grey.

*gremius subgrisea*, M. (32-42). The Indian Palm Bob. Ceylon C.

β. Generally paler.

\**gremius gremius*, F. India, Burma, South China (= *divodusa*, M; ab *robsonii*, DeN; *disu*, Koll: ab *centripuncta*, Seitz).

γ. Above unmarked. Unh white with black spots as usual. ♀ with spots upf.

*gremius chilon*, Doh. (38). Sumba. Flores.

δ. Above as *gremius*, only single apical spot upf. Unf outer  $\frac{2}{3}$  of lb white. Unh dorsum whitish, only lower black spots present.

*gremius migreus*, Semp. (32). Philippines.

2a (1). Unh with obscure ill defined, suffused black spots in a decreasing row from 1c-3, 6 and upper edge of cell; spot in 1c always present and larger than the rest.

2b (4). Uph no white about the tornus.

2 (3). Above black, unmarked. Cilia F brown; H white, chequered brown. Unf a white patch mid lb; unh white to v6 and sev, some obscure brown marginal spots.

*minuta*, M. (28-32). The Ceylon Palm Bob. Ceylon. NR. (= *sinhalus*, Plotz).

3 (2). Above dark brown with hyaline spots F.

a. Upf small hyaline spots in 2 and 3, rarely a dot in 6. Cilia brown, below with more or less purple sheen; apex and costa F and all H overlaid sparse grey white scales, general appearance dark grey brown. Unf obscure discal white area in 1b.

*rama bipunctus*, Swin. (26-34). The Small Palm Bob. Nilgiris. R.

β. Upf always hyaline spots in 2 and 5 and usually a double (or single lower) spot in cell and a spot in 6; the discal spots much closer together than in *gremius*, inner edges of spot in 2 and cell spot in line; traces of spot in 1b against v1, which unf shows as a broad white patch extending across 1b. Cilia narrowly white becoming brown at apex F. Below white scaling much denser, general appearance pale grey.

*rama rama*, Mab. Bengal, Sikkim to Tavoy R. (= *sala* Auct nec Hew).

γ. Above spots prominent. Cilia H grey, brown at apex H and on F. Below apex and costa F and all H overlaid pale ochreous scales; unf white area mid lb more extensive, reaching dorsum.

\**rama aditus*, M. Andaman and Coco Islands. NR.

4 (2b). Uph with white tornal area. Above black, no spots upf (may be faint in race *scopas*). Cilia white to apex H. Below as *minuta*.

a. Uph white area narrow and irregular, most extensive along vs 1a and 1b, not reaching dorsum.

*everyx everyx*, Mab. (26-34). The Malay Palm Bob. Tavoy, VR. Malay Peninsula, Sumatra, Borneo. (= *tripura*, DeN).

I. 47. *Suastus*.—The Palm Bobs. (Plate 31)—*contd.*

$\beta$ . Uph white tornal area regular and sharp defined, extending  $\frac{1}{4}$  along termen and dorsum.

*everyx scopas*, Stg. Java, Bali, Pulo Laut and Philippines.  
(= *albescens*, Mab).

I. 48. *Scobura*.—The Forest Bobs. (Plate 31).

Above dark brown with hyaline spots F and H; upf always non-hyaline spot in 1b against v1, large spot in 2, double spot in cell, of which the upper part is smaller and may be absent, apical spots 6-8 (may be incomplete).

1a (3a). Upf no spot in 3 (rarely a dot in *cephala*) and the cell spot is immediately over the spot in 2. Uph large double hyaline spot in 4-5 and smaller one in 2 (may be absent). Cilia grey on H.

1 (2). Upf usually a small spot in 4. Unf costa and apex and all H greenish yellow. Unh there may be 3 small white spots in 1c, 3 and 6 against the larger spots in 2, 4-5 and the spots are usually chestnut edged; in ♀ the chestnut colour is very pronounced and usually occupies the whole area from the spots to the termen and on the apex upf.

\**cephala*, Hew. (27-36). The Forest Bob. Sikkim to Burma, Malay Peninsular, Sumatra and Borneo. NR. (= *isota*, Swin).

2 (1). Upf never a spot in 4. Uph spot in 4-5 always large and spot in 2 obscure or absent. Unf apex and costa and all H overlaid greyish green. Unh spots black edged and often a discal row of black spots and 2 spots in the cell, also black.

*phiditia*, Hew. (32). The Malay Forest Bob. Manipur to Burma. Malay Peninsula and Sumatra. Borneo. R. (= *martini*, El and Ed).

3a (1a). Upf prominent spot in 3.

3 (4a). Upf with spots in 4, 5: figure of 8 spot in cell. Uph spots as in *cephala*. On unh and at apex unf the veins paler.

*coniata*, Hering. (38). Tsha-Jiu-San, China.

4a (3). Upf no spots in 4, 5.

4 (5). Uph small spots in 2, 3 (nearer margin), sometimes dot in 5. Upf spot in 4 shifted out. Unf basal half costa and usually apex bright yellow, rest except dorsum bright chestnut. Unh basal half yellow, outer half chestnut, small dark ringed white spots in 1c, 2, 3, 5, 6 and sometimes dark spot base 7.

*cephaloides*, DeN. (36-40). The Large Forest Bob. Sikkim to S. Shan States. Tonkin. Hainan. R.

5 (4). Uph unmarked. Upf 2 spots in cell, one above the other and over the spot in 2. Below as *cephaloides*, but unh large white spots in 2 and 7, small in 1c, 3, 4, 8: dark spot end cell and base 7.

*cephalina*, nov. (27). Java.

I. 49. *Suada*.—The Grass Bobs. (Plate 31).

Above brown with hyaline white spots F, typically prominent lower spot in cell, large spot in 2 immediately below it, dot base

I. 49. *Suada*.—The Grass Bobs. (Plate 31)—*contd.*

3, apical spots 6-8 and an elongate non-hyaline spot along mid v1. Unh unmarked.

α. Upf discal spots prominent, apical set complete and decreasing. Uph clothed pale brown hairs on disc. Unf apex broadly and all unh overlaid dense olive scales.

\**swerga swerga*, DeN. (32-36). Sikkim to Burma. Malaya. Sumatra. NR. (= *møelleri*, M).

β. ♂ upf spot in 3 and upper apical spots tend to be absent: uph paler. ♀ spots very prominent: uph except for costa and termen pale yellowish brown. Unf apex brown above v6 and then decreasingly white to tornus: unh white except for narrow brown costa.

*swerga triplex*, Plotz. Java.

γ. ♂ upf spots absent or very obscure: in ♀ discal spots prominent, apical usually absent. Uph tornus broadly pure white, more extensive in ♀. Below as *triplex*, but in ♀ unh broad ochreous brown costa and subtornal dark patch. Abdomen prominently white ringed.

*swerga cataleucos*, Stg. Borneo, Pulo Laut, Philippines. (= *albinus*, Semp and *flavea*, Stg, MS.).

I. 50. *Koruthaialos*.—The Velvet Bobs. (Plate 31).

Above and below dark brown, no spots but usually with a prominent red discal band upf and unf; unh no scaling.

1a (3a). Palpi third joint long and thin.

1 (2). Upf discal red band sharply defined, 3 mm wide, clear red and extending from upper edge of cell (or just beyond) to v2 (or just beyond). Unf band rather more extensive at either end, sides straight and parallel or convergent posteriorly. A fairly constant form.

*rubecula*, Plotz. (32-37). The Narrow-banded Velvet Bob. Assam to Burma. Malay Peninsula and Islands, Philippines, Luzon, Natuna and Celebes. C. (= *hector*, Wat and *namata*, Fruh. I have verified true *rubecula* from Assam to Malay Peninsula and Sumatra, but the other localities require check).

2 (1). Upf discal band absent, just indicated or sullied.

α. Upf unmarked; unf usually some faint red suffusion at upper end of cell and in ♀ a dusky suffused band.

*butleri butleri*, WM. (32-37). The Dark Velvet Bob. Sikkim to N. Burma. R. (I have verified the type specimen in the Indian Museum).

β. Upf discal band sullied, dull, 2 mm wide, from upper end cell to v3 or 2, dcu prominently black. Unf variable, may be a trace of red only at end cell or a dusky red band from costa to below v1.

*butleri avidha*, Fruh. S. Burma. S. Annam. NR.

γ. Upf unmarked or with traces of a red spot at end cell. Unf a large dusky red area about upper edge of cell and a detached smaller area about base 3 (may be absent).

*butleri sumatrana*, nov. Sumatra.

δ. Unmarked above and below.



I. 50. *Koruthaialos*.—The Velvet Bobs. (Plate 31)—*contd.*

*butleri niasicus*, Fruh. Sumatra, Nias.

η. Larger, otherwise as last.

*butleri haraka*, Fruh. Java.

ξ. Highly variable race, varying from *avidha* to *niasicus*.

*butleri palawites*, Stg. Palawan. Philippines.

3a (1a). Palpi third joint short, stouter, just protruding.

3b (6). Upf always a red band.

3 (4a). Unf discal red band divided by dark veins, discontinuous at v1 and the red area is extensive in 1b. Upf band dusky red, divided by dark veins and the dcv. black, extends from costa to tornus, 2 mm wide in ♂, 5 mm in ♀. Large.

a. Upf band comparatively wide.

*focula kophene*, DeN. (46-52). Sumatra.

β. Band narrower, more broken, tending to become obsolete.

*focula focula*, Plotz. Java.

4a (3). Unf discal red band not divided by black veins, extends from costa to dorsum and is more or less equally wide throughout, broad and clear red, inner edge below cell always concave.

4 (5). Of large size with a very broad band upf and unf.

*kerala*, DeN. (49-52). Malaya. Sumatra. Borneo.

5 (4). Smaller.

a. Upf band orange red, from costa to tornus, usually wide, 5 mm, but may be as narrow as 3 mm and stop at v3; on unf in narrow banded specimens the inner edge of the band is irregular, but always concave. ♀ unh ochreous brown.

\**xanites gopaka*, Fruh. (34-40). The Bright Red Velvet Bob. Assam to Burma. Tonkin. NR.

β. Larger. Upf band deeper red.

*xanites xanites*, But. (37-41). S. Burma. Malaya. Sumatra. Borneo and Philippines. NR. (= *latitia*, Plotz; *luzonensis*, Fruh.).

γ. Upf discal band very dark red and reduced, may consist of only of a spot end cell. Unh band as broad as usual.

*xanites javanites*, Stg. (36-39). Java, Bali, Batu.

6 (3b). Above and below dark brown with a purple plum suffusion, no traces of a red band; unf dorsum broadly pale pinkish brown. F v11 not so close to v12.

*nigerrima*, Swin. (36-42). The Plain Velvet Bob. Assam to S. Shan States. R.

I. 51. *Sancus*.—The Coon. (Plate 31).

Above dark shining brown, unmarked. Below dark brown, dorsum F pale; on apex F a narrow oblique purple white patch, small whitish post-discal spots in 4 and 5 and subapical in 6-9. Unh dorsum broadly pale brown, a purple grey area about end cell, separated from a similar broad marginal area by discal spots in a straight line from 2-5, spots in 6, 7 and in middle of upper edge of cell.

a. The markings below prominent.

\**pulligo subfasciatus*, M. (36-46). South India, Cachar to Burma, Siam, Annam. Malay Peninsula. C.



I. 51. *Sancus*.—The Coon. (Plate 31)—*contd.*

β. Larger. Below the purple grey areas absent, the spots dull yellow.

*pulligo pulligo*, Mab. Sumatra, Java, Borneo and Bali. (= *forensis*, Plotz).

γ. Violet washed both sides.

*pulligo kethra*, Pl. Philippines. (= *ulundu*, Stg, Palawan).

δ. Below markings obsolete and brand very faint.

*pulligo fuscula*, Snell. Celebes. (*cellundo*, Stg).

I. 52. *Stimula*.—Watson's Demon.

Above dark brown unmarked, becoming outwardly paler on F, in ♀ broadly and very markedly so. Below similar, but paler and unf dorsum to v2 very pale brown. Very like *Kerana diocles*.

*swinhoei*, El and Ed. (48-50). Sikkim to Burma. R.

I. 53. *Ge*.—The Circular Tufted Demon.

♂ above uniform dark brown, cilia grey; ♀ with pale yellow discal spots in 2 and 3 and apical in 6-8, conspicuously paler beyond the spots; uph in ♂ centrally paler. Below dark brown, dorsum F pale brown; in ♀ the outer half of the wing is conspicuously very pale brownish yellow.

*geta*, DeN. (35-37). S. Mergui. Malay Peninsular. Sumatra, Batu, Java and Borneo. VR.

I. 54. *Ilma*.

Above dark brown. Upf broad compact pale yellow hyaline band in cell, 2 and 3 continuing non-hyaline to the costa and v1. Cilia H grey.

*irvina*, Pl. (57). Celebes. (*jovina*, Swin).

I. 55. *Kerana*.—The Demons. (Plate 31).

Above dark brown with or without a red band F.

1 (2a). Above dark brown unmarked, cilia brown; ♂ no brand. Below dark brown, termen F and H broadly paler; on H the basal area is also paler, leaving a dark chocolate costa and discal band to v1b; costa and apex F and all H clothed inconspicuous ochreous scales. F v5 bent at origin.

\**nigrita*, God. (48-60). The Chocolate Demon. Bengal, Kumaon to Burma, Siam, Malay Peninsula and Islands, Philippines. C. (Individuals from the Malay Islands have a more or less prominent whitish curved sub-apical fascia unf).

(= *diocles*, M; *maura*, Snell; *fumatus*, Mab; *evaira*, *sumata*, *prabha*, *savara*, *vasuba*, Fruh are minor races from Siam, Nias, Bazilan, Kina Balu and Java).

2a (1). Upf broad red discal band (may be absent in *niasana*).

2b (5). F v5 bent down at origin. Body dark brown.

2 (3a). Below no spots. ♂ unf towards base a large black velvet patch from v1 to mid cell; uph a similar patch filling the cell.

I. 55. Kerana.—The Demons. (Plate 31)—*contd.*

a. Upf a very broad orange red discal band from mid costa to tornus at v1; narrower at costa and indented at the origin of v5.

*armata armata*, Druce. (49-60). The Red Demon. S. Mergui. VR. Malay Peninsula, Sumatra and Borneo.

β. Upf, band absent, obscure or broken into spots.

*armata niasana*, Evans. Nias.

3a (2). Below with curious glistening pale purple spots only visible in a side light and may be absent; unfl in cell just before the red band, sub-apical in 5, 6 and 7, unfl discal in 2, 3, 5 and 6. Upf and unfl a broad orange red band from mid costa to v1 at tornus.

3 (4). Upf the red band narrows towards costa.

*gemmifer*, But. (35-38). The Gem Demon. Tavoy to S. Burma, Malay Peninsula, Sumatra, Borneo, Natuna, Philippines. R. (= *dombya*, Fruh).

4 (3). Upf discal band broadens towards costa.

*vaijrada*, Fruh. (36). Borneo. VR.

5 (2b). F v5 only slightly bent down at origin. ♂ upf a very broad orange yellow band from mid costa below the scv to mid dorsum; at v2 it is curved in and nearly reaches the base. Thorax and base H clothed orange yellow hairs. Abdomen with narrow white rings. ♀ band upf orange red, not produced towards base; inner edge very irregular: no orange hairs at base or thorax: unfl discal band as upf, inwardly evenly concave, reaching costa, apex paler yellowish. Unfl pale purple spots (may be absent) basal, central and discal in 1c, discal in 2 and at end cell.

*fulgur*, DeN. (37). Malaya. Sumatra. Borneo.

I. 56. *Ancistroides*.

1 (2). Above dark brown, upf unmarked, uph tornal half yellow. *longicornis*, But. (55). Timor. Celebes. (= *boisduvali*, Mab, Celebes).

2 (1). Above dark brown: upf orange spots in cell, 1b to 4 and

6. Below margins broadly paler.

*othonias*, Hew. (55-60). Borneo.

I. 57. *Udaspes*.—The Grass Demon. (Plate 31).

1 (2). Above dark brown with large hyaline white spots; upf a spot across cell, conjoined to a bent spot in 1b-2, small detached spot in 3, conjoined spots in 4 and 5, conjoined sub-apical spots in 6-8; uph a large central hyaline area in 1c-6. Cilia chequered brown and white. Antennæ white banded below club. Below dark brown, apex F, dorsum and termen H overlaid pale whitish scales, which on H leave a large dark spot mid 1c to base 2. Considerable seasonal variation in the colouring below.

*\*folus*, Cr. (40-48). Ceylon, India, Kangra to Burma, Siam, China, Malay Peninsular and Islands. Sumbawa. C. (= *cicero*, Fab).

2 (1). Upf a prominent white spot in 4-5 and a small spot base 3. Unfl striated.

*stellata*, Ob. (40-45). The Thibetan Grass Demon. Mænia, E. Thibet. VR.

## I. 58. Notocrypta.—The Banded Demons. (Plate 31).

Above black; upf a broad curved hyaline white discal band consisting of large conjoined spots in 1b, 2 and cell. Below dark brown usually with some whitish scaling on the paler areas at the apical part of the termen F and the dorsal portion H also on H from mid end cell to mid v1b; often some ochreous scaling between band and apex on F and on basal half of H. Antennæ white banded below beginning of a club or only white streaked below.

1a (5a). F no traces of subapical spots in 6-8.

1b (4). F inner edge of discal band only very slightly curved or angled at v2: ♂ with no dot in 4, present in ♀. Unh unmarked.

1c (3). Wings rounded: F termen concave and nearly at right angles to dorsum.

1 (2). F discal band very wide, 5 mm.

*quadrata*, El and Ed. (42-45). Malaya, Borneo.

2 (1). F discal band narrow, 2 mm.

*pria*, Druce. (30-34). The Small Demon. Tavoy to S. Burma, Malaya, Borneo, ? Sumatra. NR. (= *asangu* and *chunda*, Fruh, Java and Palawan).

3 (1c). Wings produced: F termen straight and at about 130 degrees to dorsum.

a. Upf band complete, about  $2\frac{1}{2}$  mm.

*volux volux*, Mab. (40-50). The Pointed Demon. Karens—S. Burma, Malaya, ? Sumatra, Borneo, Philippines. NR. (= *albifascia*, Auct nec M. ? = *mahima*, Fruh, Bazilan: *sukavata*, Fruh, Sumbawa).

β. Upf discal band narrow, tending to be macular and the spot in 1b may be absent.

*volux niasana*, Evans. Nias.

γ. Upf no spot in 4. Below violet washed.

*volux yaya*, Fruh. Celebes.

4 (1b). F inner edge of discal band sharply angled at v2: ♂ ♀ almost invariably with a dot in 4.

a. Below with prominent purplish white scaling.

*paralysos alysia*, Evans. (33-40). The Common Banded Demon. Ceylon, S. India, Mussoorie to Karens. C.

β. Darker, scaling unh less prominent.

*paralysos clavata*, Stg. S. Burma, Malayana, Palawan. C. (= *devadatta* & *sidha*, Fruh, Sumatra and Java).

γ. Unh prominent silver spot mid cell and small spots in 2 and 5.

*paralysos paralysos*, WM and DeN. Andamans and Nicobars. R. (= *infrapicta*, Strand).

5a (1a). F always with 2 or 3 sub-apical spots, which are at least traceable unf; usually small spots mid 3, 4 and 5.

5 (6). Unf the discal band continued to costa by a more or less well developed yellowish white patch. The white spotting and scaling below is very variable; local races are very difficult to define.

a. Small. Spotting and scaling variable.

\* *feisthamelii alysos*, M. (38-50). The Spotted Demon. Murree to Burma. W. China, Siam, Malay Peninsula, Sumatra and Borneo. C. (= *rectifasciata*, Leech; ? *arisana*, Sonan, Formosa).

I. 58. *Notocrypta*.—The Banded Demons. (Plate 31)—*contd.*

β. Larger. White spotting and scaling below prominent.

*feisthamelii avattana*, Fruh. Java. (= *fraga*, Fruh).

γ. Smaller. Spotting upf only in 7, 8. Below prominent purple scaling.

*feisthamelii samyutta*, Fruh. (40-50). Lombok, Sumbawa. (= *dharana*, Fruh, Sumbawa).

δ. Large form with very small spots and very prominent purple scaling below.

*feisthamelii alinkara*, Fruh. (52-56). Philippines.

η. Spotting more or less obsolete.

*feisthamelii celebensis*, Stg. (46-52). Celebes.

6 (5). Unf discal band not continued above scv. Above spotting and below white scaling prominent. Apical spots conjoined.

*curvifascia*, Fd. (38-50). The Restricted Demon. Ceylon, S. India, Sikkim to Burma, China, Andamans, Japan, Siam, Malay Peninsula, Sumatra, ? Java, Borneo and Philippines. C. (= *restricta*, M: *chimæra*, Plotz).

I. 59. *Gangara*.—The Giant Redeye. (Plate 31).

Above brown with large discal hyaline yellow spots on F, across cell, in 2 and 3. Below some blue white scaling at apex F and bands composed of similar scales on H.

1 (2). F with apical spots in 6-8, spot in 6 out of line, nearer margin; spot in 3 against mid v4. Cilia H grey at apex.

α. Normally with a small non-hyaline spot in 1b against v1 under the spot in 2.

*thyrsis clothilda*, H5. (70-76). The Giant Redeye. Ceylon. NR.

β. No spot in 1b.

\* *thyrsis thyrsis*, F. S. India. Sikkim to Burma, Siam, Tonkin, Malay Peninsular and Islands. NR. (= *pandia*, Fruh, Java: race *hainana*, Sonan, Hainan).

γ. F spot in 2 not to base of v3; in other races spot in 2 is larger and reaches to middle of cell spot.

*thyrsis yasodara*, Fruh. Andamans. S. Nicobars. NR.

δ. ♂ upf only 2 apical spots.

*thyrsis philippensis*, Fruh. Philippines.

2 (1). F no apical spots; discal spots differently placed, spot in 3 reaches to behind origin of v4 and nearly to origin of v3; spot in 2 against mid v3 and not near cell spot. Unh a white spot near base 7. ♂ upf the glandular streak absent; unf yellow tuft present.

*sagunocculus*, Martin. (65-70). Martin's Redeye. Malay Peninsular, Sumatra, Borneo. R.

I. 60. *Erionota*.—The Palm Redeye. (Plate 31).

Above brown with large hyaline yellow discal spots on F, in cell, 2 and 3; spot in 3 against mid v4.

1 (2). Upf no hyaline spots (very rarely faint); spot in 2 reaches to middle (or further) of spot in cell. Unh pale to dark brown with an irregular, often obscure, paler discal area.

I. 60. *Erionota*.—The Palm Redeye. (Plate 31)—*contd.*

a. Upf hyaline spots and apex white.

*thrax grandis*, Leech. (70-76). The Palm Redeye. W. China. VR.

β. Upf hyaline spots yellow.

\* *thrax thrax*, L. S. India. Dun to Burma. Siam, Malay Peninsula and Islands, Philippines. NR. (var. *apicalis*, nov, apex upf paler as in *acroleuca*).

γ. Smaller. Apex F above more or less white; antennæ below club much whiter and cilia above whitish. Unf a white apical patch.

*thrax acroleuca*, WM. and DeN. (52-55). Andamans and Nicobars. R. (= *hiraca*, M and *lara*, Swin).

δ. Upf 3rd outer spot less remote.

*thrax alexandra*, Semp. N.W. Luzon.

η. Similar, paler.

*thrax sakita*, Ribbe. Celebes.

2 (1). Upf with a hyaline spot in 6-8, spot in 6 pushed out (not so much as in *thyrsis*); spot in 2 does not reach to the middle of the cell spot; apex may be more or less white tipped. Unf sub-apical pale area. Unh dark brown with a more or less purple gloss, margin broadly paler, conjoined irregular violet white spots about end cell and from 1c-7, also a spot at extreme base cell and sometimes a spot near termen in 1c.

*sybirita*, Hew. (60-70). The Sybarite Redeye. S. Mergui, VR. Malay Peninsula, Borneo.

I. 61. *Paduka*.—The Banded Redeye. (Plate 31).

1 (2). ♂ above dark brown, unmarked. ♀ with large hyaline yellow discal spots in cell, 2 and 3, spot in 2 with its inner edge against middle of cell spot and its outer edge against inner edge of spot in 3, which is against mid v4; small non-hyaline spot in 1b against spot in 2. Unf pale sub-apical area, overlaid sparse white scales and a more or less prominent spot in 7; dorsum whitish. Unh a broad prominent transverse band of violet white scales from v1b below cell to apex and expanding towards apex. Cilia above pale yellow.

a. Unh transverse band well defined throughout, violet white.

\* *lebadea subfasciata*, M. (62-68). Ceylon. R.

β. Unh as last; no trace of the spot in 7 unf.

*lebadea glandulosa*, Dist. Sikkim to Burma, Tonkin, Malay Peninsular, Sumatra and Java. VR.

γ. Unh transverse band silvery white, dense from v1b to end cell and thence sparse, extending to middle of disc. Unf scaling to apex. ♀ spots whiter, smaller and more separated, spot in 1b larger.

*lebadea andamanica*, WM. Andamans. R.

δ. Upf ♂ brand more distinct. ♀ no spot in 1b upf.

*lebadea lebadea*, Hew. Borneo, Pulo Laut. R.

2 (1). ♂ upf 3 large white spots. Below some grey scaling, but not forming bands.

*toradja*, Fruh. Celebes (not seen by me).



I. 62. *Pudicitia*.—The Spotted Redeye. (Plate 31).

Above brown with large yellow hyaline spots F and H. Upf 2 spots in cell (lower nearer base and behind origin of v3) large spot in 2 immediately below, spot in 3,  $\frac{1}{2}$  along v4; apical spots 6-8 in line; semi-hyaline spot above middle of v1 replaced by a yellow patch unf. Upf 3 hyaline yellow discal spots in 2, 3 and 4-5. Below as above.

\* *pholus*, DeN. (58-64). The Spotted Redeye. Bhutarr to Naga Hills. VR.

I. 63. *Matapoides*.—The Tufted Redeye.

Above dark brown; upf a green streak in certain lights below v2; otherwise unmarked; cilia orange at tornus H. Below rich dark brown, unmarked; unf ♂ a brand on the nacreous area mid 1b. H lobed.

*smaragdinus*, Druce. (60). Borneo. VR.

I. 64. *Matapa*.—The Branded Redeye. (Plate 31).

Unmarked dark brown.

1a (6). ♂ upf brand a seam from mid 1b to base 3.

1 (2a). H cilia grey or very pale yellow. Unh warm ferruginous brown. ♂ brand black, obscure.

*aria*, M. (40-45). The Common Redeye. Ceylon, S. India to Dun to Burma, Andamans, China, Hainan, Siam, Tonkin, Malay Peninsular and Islands to Philippines. C. (= *pulla*, Plotz and *neglecta*, Mab, Java and Philippines).

2a (1). H cilia and tip of abdomen bright orange.

2b (4a). ♂ brand black, obscure.

2 (3). Above purple glossed, especially at apex F. ♀ body and base wings clothed metallic bluish hairs. ♂ below dark brown, apex and dorsum F paler; ♀ uniform pale brown.

*purpurascens*, El and Ed. (48-54). The Purple Redeye. Sikkim to Karens. Tonkin, Sumatra, Borneo. R.

3 (2). Above no (or faint) purple gloss, apex F grey. Below ochreous brown; apex and mid dorsum F and base H very pale brown.

*druna*, M. (48-54). The Dark-brand Redeye. Sikkim to Burma. Andamans, Malay Peninsula and Islands. NR.

4a (2b). ♂ brand grey and prominent.

4 (5). Below dull dark brown, veins conspicuously black.

*sasivarna*, M. (40-47). The Black-veined Redeye. Sikkim to Burma, Malay Peninsular, Sumatra, Pulo Laut. NR.

5 (4). Below ♂ dark ferruginous brown; ♀ pale yellow brown. Upf and unf apex rather paler.

\* *shalgrama*, M. (46-52). The Grey-brand Redeye. Sikkim to Burma. NR. Recorded from Andamans. Tonkin, Java, Bali, Pulo Laut. NR.

6 (1a). ♂ upf tear-shaped black brand between base 2 and 3 under mv. H tornus narrowly and cilia bright orange.



I. 64. Matapa.—The Branded Redeye. (Plate 31)—*contd.*

*celsina*, Mab. (48). Philippines. Celebes. Moluccas. (= *ractaya*, Fruh, Mindanao: *hyrmina*, Hew, Celebes: *assur*, Mab, Moluccas).

## I. 65. Oerane.—The Demon Flitter. (Plate 31).

Above black; upf compact broad white central band from upper edge cell to mid v2 and a small conjoined spot base 3; no apical spots or spot in 1b or on H. Below dark brown, dorsum F paler; apex F and all H very sparsely overlaid greenish ochreous scales; unf discal band is continued in ♂ to v12 by greenish ochreous scales and in ♀ by white scales. ♀ paler and with wider band.

α. Upf spot at base 3 prominent and reaching base 3.

\**neaera neaera*, DeN. (28-34). Dawnas to S. Burma. R.

β. The spot tending to become obsolete.

*neaera drymo*, Mab. Malaya, Sumatra.

γ. Similar, but with wings more pointed.

*neaera pusilla*, Fruh. Java, Borneo.

δ. Unf dorsal area white. Upf no spot base 3. Wings broader.

*neaera microthyrsus*, Mab. Philippines.

## I. 66. Hyarotis.—The Flitters. (Plate 31).

1 (2a). Cilia broadly chequered white and brown; antennæ white banded before apiculus. Above dark brown; upf with white hyaline spots, across cell, in 1b (non-hyaline) against v1, discal in 2 and 3, apical 6-8. Below dark brown, outer half dark ochreous, bearing centrally a broad diffused dark brown band; unf cell spot continued to costa and spot in 1b diffused: unh an irregular broken central white band from v1 across end cell to v8.

α. Upf spots small, those in cell and in 2 do not overlap.

*adrastus adrastus*. Cr. (38-48). The Tree Flitter. Ceylon, S. India. NR. (= *phaeniceis*, Hew).

β. Upf spots larger, those in 2 and 3 overlapping.

\**adrastus praba*. M. Kangra to Burma, Andamans, Siam, Hong Kong. NR.

γ. Unh band more united.

*adrastus meluchus*, Fruh. Malayana.

δ. Unh band wider and still more united.

*adrastus mindanensis*, Fruh. Mindanao, Philippines. (= *palawensis*, Fruh, Palawan).

2a (1). Cilia uniform dark brown.

2 (3a). Unh base dark golden yellow. Upf and unf large hyaline white spot across cell, joined to a still larger spot in 2. Otherwise unmarked.

*basiflava*, DeN. (38-48). The Golden Flitter. S. India. R.

3a (2). Unh unmarked.

3b (5). ♂ ♀ with a white band upf.

3 (4). Antennæ plain in ♂, white under club in ♀. ♂ upf white band consisting of a large spot in cell, in 2 and a smaller one in the

I. 66. Hyarotis.—The Flitters. (Plate 31)—*contd.*

upper part of 1b, all conjoined: unf traces of white dots in 3 and 6, which may appear above or be absent, white spot in 1b diffused to a whitish tornal patch. ♀ upf no spot in 1b, dots in 3, 6, 8: unf white band continued to costa.

*albifascia*, M. (40). The Banded Flitter. Karens to S. Burma. Malaya. VR. (?=*asawa*, Fruh, Tonkin).

4 (3). ♂ ♀ antennæ conspicuously white below club. Similar to *albifascia* but larger: upf discal spot in 1b small or absent, spot in cell incised both sides, a dot mid 3.

*inornata*, El and Ed. (50). Borneo.

5 (3b). ♂ dark brown, unmarked. ♀ upf with a white band as in *albifascia*, but usually there is a spot at base 3 and the spot in 1b may be absent.

\**monteithii*, WM and DeN. (35-40). The Dubious Flitter. Cachar to S. Burma. Malayana. Philippines. R. (= *perfusca* and *singularis*, Mab: *noctis*, Stg: *dissimilis*, Snell, MS; *comoploea*, Swin).

## I. 67. Kineta. The Brush Flitters.

1 (2) Upf with small pale yellow hyaline spots, narrow spot across cell constricted in middle or divided in two, quadrate to nearly vertical linear spot in 2, small spot in 3 and apical in 6-7 or 8. Unf dorsum pale, diffused white discal spot in 1b; apex F and all H dark purple washed in fresh specimens; unh bearing a very obscure dark central and postdiscal broad band, small yellow spots in 2, 3, 4 and end cell, one or more of which may be absent.

\**microstictum*, WM. (34-39). The Brush Flitter. Coorg. Cachar to S. Burma. Malaya. R. (= *binghami*, Swin: ? *biseriata*, El and Ed, Luzon and Mindoro).

2 (1). Above unmarked dark brown with a purple gloss, more pronounced below. Uph costa and unh dorsum paler. ♀ paler.

a. Purple gloss faint.

*iadera iadera*, DeN. (32-36). Malaya. Sumatra. Java.

β. Purple gloss much more pronounced.

*iadera ciliata*, El and Ed. Borneo.

## I. 68. Zographetus.—The Flitters. (Plate 31).

Above dark brown with hyaline white spots on F; 2 cell spots (upper small and often absent), quadrate spot in 2 immediately under the cell spot, small spot in 3, apical in 6 and sometimes 7, small non-hyaline spot in 1b in ♀ and ♂ of *satwa* against v1. Cilia greyish.

1 (2a). Antennæ plain. Below basal half costa F and basal 3/5 H bright yellow, outer 2/5 H and apex F purple brown, paling outwardly. Unh small dark spot mid cell and mid 7.

\**satwa*, DeN. (30-36). The Purple and Gold Flitter. Kumaon to Burma, Siam, Malay Peninsula, Sumatra and Java. NR.

2a (1). Antennæ white banded before apiculus.

2 (3). Similar to *satwa*, but wings more produced.

I. 68. *Zographetus*.—The Flitters. (Plate 31)—*contd.*

*durga*, Pl. (32). Philippines. Sumbawa.

3 (2). Unf costa and apex and all unh ferruginous to ochreous (paler in ♀), bearing unh a more or less prominent discal row of purple brown spots in 1-7, a spot mid 7 and mid cell.

α. Extremely variable in size, colour of underside, and spots unh, which are usually large and diffused, but may be separate and sharply defined, often upper discal spots absent.

\**ogygia ogygia*, Hew. (30-32). The Purple spotted Flitter. S. India. Sikkim to Burma, Malaya, Sumatra. Java. R. (= *flavipennis*, DeN; *flavulum*, DeN).

β. Unh dark yellow of a peculiar shade; lower discal spots coalesced to a very broad dark band, connected by dark veins to a broad dark marginal area.

*ogygia andamana*, Evans. Andamans. R.

γ. Smaller. Paler. Below uniform reddish brown, spots smaller, more separated.

*ogygia ogygiodes*, El and Ed. (29). Borneo.

I. 69. *Isma*.—The Tufted Flitters. (Plate 31).

Above dark brown with pale yellow detached spots upf; 2 spots in cell lower elongate, spot in 2 outwardly concave, small spot in 3, may be dot in 4 and apical in 6 and sometimes 7; ♀ may have a non-hyaline spot in 1b against v1. Unf dorsum white. Unh a more or less obscure discal row of dark spots in 1c-6 and a spot end cell. Cilia dark brown at tornus H in ♂ and at apex F, elsewhere the long hairs grey or pale yellow.

1 (2). Comparatively small. Below dull dark brown, apex and costa F and all H more or less sparsely overlaid ochreous green scales.

*protoclea*, HS. (30-34). The Plain Tufted Lancer. Karens to S. Burma, Malay Peninsular, Java, Borneo, Banguay, Borneo, Pulo Laut. R. (= *iapis*, DeN and *obscura*, Dist).

2 (1). Comparatively large. Below purple brown.

α. Below purple brown, the outer  $\frac{1}{2}$  F and lower  $\frac{3}{4}$  H greyish white, all H with a conspicuous purple gloss.

\**vulso bicolor*, Evans. (38-40). The Purple Tufted Lancer. Karens and Dawnas, Malay Peninsular. R.

β. Below purple brown, overlaid ochreous scales, no purple wash, the dark spots unh in 2 and 3 may be white centred. Upf hyaline spot in 2 more quadrate.

*vulso vulso*, Mab. Sumatra, Java and Bali. R.

γ. Below with a feeble purple gloss on basal half H, otherwise rather as *protoclea*. The clasp of the genitalia is serrate on the upper edge, not plain as in rest.

*vulso purpurascens*, El and Ed. Borneo, Pulo Laut.

I. 70. *Sepa*.—The Lancers.

1a (7a). ♂ upf with a discal stigma.

1b (4a). ♂ upf stigma from v1-v3.

I. 70. *Sepa*.—The Lancers—*contd.*

1 (2a). ♂ upf stigma angled at v2 and long hairs at tornus H. ♂ upf long narrow oblique pale yellow spot in 2, dots in 3, 6 and sometimes 4, 7: unf outer half of lb pale: unh chocolate, no ochreous scales, yellow dot in 2 and at end cell. ♀ spot in 2 upf rhomboid.

*cronus*, DeN. (42-44). Malaya. Sumatra. Borneo.

2a (1). ♂ upf stigma straight: no long hairs at tornus H.

2 (3). ♂ upf spots large, spot across lb, 2 elongate spots in cell, spots in 2, 3, 4 and 6, 7: uph elongate spots in 2, 3, 4: unh brown, sparsely covered ochreous scales, pale dot in 5. ♀ spots in cell upf obscure or absent, spot in lb rounded, against v1: uph small separate spots in 2, 3 and may be a dot in 4.

*fenestrata lenya*, nov. (36-39). The Fenestrate Lancer. Mergui, S. Burma. Malaya. Sumatra. R.

β. ♂ upf spots more conjoined, a dot in 8: unh also dots in 1c and 6. Above faint indigo gloss. ♀ uph spots in 2-4 conjoined.

*fenestrata fenestrata*, El and Ed. Pulo Laut. Borneo. (♀ = *concinna*, El and Ed).

3 (2). Larger and darker, spots smaller. ♂ upf spot in lb not across the space: discal spots well separated.

α. ♂ upf spots small and yellow, spot in 3 absent (present unf): 2 cell spots, spots in lb, 2, 4, 6, 7. Unf large white tornal area. Uph plain. Unh bright yellow brown spots in 2, 3, 4.

*miosticta miosticta*, DeN. (40-44). Perak (1 ♂ BM.).

β. ♂ upf spots larger and white, spot in 3 present: uph spots in 2, 3, 4. Unh spot in lb diffused but no white tornal area. Unh darker.

*miosticta javana*, nov. Java.

γ. ♂ upf spots small, cell spots obscure (more marked unf), no spot in 4: unf spots in lb, 2, narrow, linear: uph spots in 2, 3: unh dark brown. ♀ upf spots better marked, single upper spot in cell: uph spots in 2, 3 and unh also in 5.

*miosticta cicatrosa*, El and Ed. Kina Balu, Borneo. (♀ = *umbrosa*, El and Ed).

4a (1b). ♂ upf stigma only from v2 to v3, also a brand base lb.

4 (5a). F spots white, cell spots conjoined, detached spots in lb, 2, 3, 6 and 7. Uph ♂ with dots in 2, 3: ♀ plain. Unh greenish brown.

*dawna*, Evans. (38). The Dawna Lancer. Dawnas—S. Burma. VR.

5a (4). F spots yellow: cell spots separate and often a dot in 4.

5 (6). Uph plain. Upf spots small: upper cell spot obsolete. Unh chocolate, at most a dot in 2.

*indistincta*, Druce. (38). Borneo.

6 (5). ♂ uph conjoined spots in 2, 3, 4 and a dot in 5: ♀ may have a dot in 2 only. Unh ochreous brown; ♀ may have dots in 2, 3, 4.

α. ♂ upf cell spots equal.

*feralia ferox*, nov. (42-44). Java.

β. ♂ upf upper cell spot small.

I. 70. *Sepa*.—The Lancers—contd.

*feralia feralia*, Hew. Borneo.

7a (1a). ♂ upf no stigma, but with a brand base 1b.

7b (9a). Upf inner edge of spot in 2 against origin v3, under outer edge of lower cell spot, if present, as in all previous species.

7 (8). F cell spots prominent.

a. ♂ upf 2 elongate cell spots, round spot mid 1b, large spot in 2, small in 3, dots in 6, 7: ♀ cell spots smaller and may be absent. ♂ uph conjoined elongate spots in 2 to 4: ♀ small round spots in 2, 3 or only in 2. Unh ochreous brown.

*guttulifera kuala*, nov. (36-38). Malaya. Sumatra.

β. Spots smaller. ♂ uph only round spots in 2, 3.

*guttulifera guttulifera*, El and Ed. (40-42). Kina Balu, Borneo.

8 (7). ♂ upf cell spots absent, only spots in 2, 3, 6, 7: in ♀ only in 1b and 4. Unh small spots in 2, 3, 4, which may show above.

*cinnamomea*, El and Ed. (40-42). Kina Balu, Borneo. (♀ = *binotatus*, El and Ed).

9a (7b). Upf inner edge of spot in 2 well behind the origin of v3 and under the inner edge of the cell spot, if present.

9 (10a). Upf elongate spots in 2, 3, 4 of which 2 reaches base of cell 2. Upf large spots, 2 in cell, in 1b, 2, 3, 4 and 6, 7. ♀ uph small spots in 2, 3, 4.

*inarime*, DeN. (36-38). Sumatra. Java. Borneo. (= *zetus*, Mab).

10a (9). Upf spot in 2 not reaching base of space 2.

10 (11). Upf cell spots unequal, upper smaller: spots large: ♀ spots smaller, cell spots absent or obscure. ♂ uph elongate spots in 2, 3, rounded in ♀. ♂ uph often spot in cell and unh dot in 4.

*bipunctata*, El and Ed. (36-38). The Malay Lancer. S. Burma. Malaya. Borneo. Palawan. VR. (♂ = *matanga*, Druce, Borneo: *bipunctata* described from ♀ from Palawan).

11 (10). ♂ upf cell spots equal, absent in ♀. Upf small round spots in 2, 3, rarely a dot in 4.

*bononia*, Hew. (26-32). The Baby Lancer. Karens to S. Burma. Malayana. R. (= *idyalis*, DeN).

I. 71. *Plastingia*.—The Lancers. (Plate 32).

Above with prominent yellow or white spots (hyaline) upf; more or less developed pale basal and costal streak F and discal area H, ochreous or greenish.

1a (8a). F v2 origin much nearer base than the origin of v11; v5 bent down at origin. Upf always a hyaline spot in 4. Above markings and cilia bright yellow.

Callineura Group.

1b (5a). Unh with purple white spots.

1c (4). Antennæ at least with the entire club yellow.

1 (2a). Upf tornus broadly yellow.



I. 71. *Plastingia*.—The Lancers. (Plate 32)—*contd.*

*vermiculata*, Hew. (40). The Vermiculate Lancer. Sumatra. VR.

2a (1). Upf tornus dark brown.

2 (3). Unf no purple white streak in 5.

a. Unh veins red. Upf cell spots one above the other, lower hardly produced towards base. Antennæ shaft yellow in ♂, club only in ♀.

*callineura burmana*, Evans. (39-42). The Red-Vein Lancer. Cachar to S. Burma. R.

β. Unh veins yellow. Upf lower cell spot prolonged towards base and conjoined to spot in 2. Antennæ as last.

*callineura perakana*, Evans. Malay Peninsula (Perak, Negri Sembilan, Pahang). R.

γ. Unh and apex unf with red veins. Upf cell spot as in last. Antennæ in ♂ and ♀ with the club only yellow.

*callineura callineura*, Fd. Sumatra, Java, Borneo.

3 (2). Unf with a purple white streak in 5. Unh veins yellow. Antennæ shaft yellow.

a. Upf cell spots conjoined or nearly so.

*latoia margherita*, Doh. (36-40). The Yellow-vein Lancer. Upper Assam (Doh). Tenasserim (1 ♂ BM). VR.

β. Upf cell spots separate, lower nearer base.

\**latoia latoia*, Hew. Dawnas to S. Burma. Siam, Malay Peninsula, Sumatra, Java, Borneo and Labuan, Philippines. R.

4 (1c). Antennæ with only the apiculus yellow. Above like *latoia*, but smaller. Unh mostly yellow. Very variable.

a. Upf basal yellow area restricted.

*helena fruhstorferi*, Mab. (32). The Small Yellow-vein Lancer. S. Mergui, Malay Peninsula, Sumatra, Java, Batoe Is. R. (= *nia-sana*, Fruh).

β. Above basal yellow area upf much more extensive.

*helena helena*, But. Borneo, Labuan, Pulo Laut. R. (= *natuna*, Fruh and ? *flavia*, Stg, Palawan).

5a (1b). Unh no purple white spots.

5 (6a). Upf the yellow spot in 2 reaches base 2 all the discal spots form a broad continuous band. Unh orange with small black spots.

*aurantiaca*, El and Ed. (35-39). The Orange Lancer. Sumatra, Borneo, Pulo Laut. R.

6a (5). Upf hyaline spot in 2 not to base, nor joined to spot in 2.

6 (7). Unh yellowish green with feeble pale spots.

*telesinus*, Mab. (32). Philippines. (= *lænas*, Mab).

7 (6). Unh dark brown with prominent yellow spots.

*liburnia*, Hew. (38). Philippines. Negros Is.

8a (1a). F v2 from mid base and origin v11.

8b (15a). F v5 straight or nearly so. Upf no spot in 4. Unh with markings.

Sala Group.

8c (12a). Unh with a semi-circular row of small black discal spots, a round spot end cell and spots at bases 2 and 7. Unf some dark spotting at the apex.



I. 71. *Plastingia*.—The Lancers. (Plate 32)—*contd.*

8d (10a). Uph no prominent yellow area. Upf a rather obscure dark ochreous streak from base to middle over v1. Antennæ white ringed mid club.

8 (9). Antennæ shaft only chequered\* at extreme base. Upf lower cell spot larger than the upper spot; apical spots in 6 or 6 and 7; hyaline spots pale yellow. Uph in ♂ a recumbent tuft of shining dark brown hairs from base overlying cell. Below apex and costa F and all H dark grey brown with a strong purple wash. Tegumen with ears at the side.

\**fuscicornis*, El and Ed. (32-36). The Purple Lancer. Cachar to S. Burma. Malaya. Siam. Pulo Laut. R.

9 (8). Antennæ shaft chequered throughout. Upf lower cell spot no larger than the upper one and may be absent; no apical spots; spots white. Uph ♂ no tuft. Tegumen with spines at the side.

a. Below apex and costa F and all H pale yellow brown with a faint purple wash.

*sala kanara*, Evans. (32-36). The Maculate Lancer. N. Kanara, S. India. R.

β. Unh etc. shining greenish grey.

*sala sala*, Hew. Ataran to S. Burma. Siam. Pulo Laut. VR. (= *maculicornis*, El and Ed).

γ. Unh etc. yellowish green.

*sala submaculata*, Stg. Palawan.

10a (8d). Uph with a prominent yellow discal patch and upf with prominent yellow basal streaks. Unh yellow.

10 (11). Uph tornal area brown.

a. Uph yellow discal area divided by dark veins. Unh spots complete and diffused. Upf cell spots sub-equal.

\**noemi noemi*, DeN. (35-40). The Spotted Yellow Lancer. Sikkim to Assam. VR.

β. Uph yellow discal area not divided by black veins. Unh markings mostly consist of narrow rings and may be incomplete.

*noemi tavoyana*, Evans. Karens (Doh). Tavoy, Mergui. VR.

γ. Much smaller. Upf upper cell spot minute.

*noemi similis*, El and Ed. (32). Borneo, Pulo Laut.

11 (10). Uph tornal area broadly yellow in ♂, in ♀ narrower and divided by black veins.

*flavescens*, Fd. (35-40). Celebes. (races from C. and S. Celebes separated by Fruh as *atala* and *samanga*).

12a (8c). Unh not marked with small spots. Antennæ not chequered. Uph yellow discal area divided by black veins.

12 (13a). Unh yellow with prominent black veins and narrow discal line from 2 to 6. Above yellow markings very prominent.

*viburnia*, Semp. (35-40). Mindoro, Philippines.

13a (12). Unh chequered all over with large black and yellow or white pale spots.

13 (14). Below pale spots white in ♂ and ♀. Above yellow markings obscure; upf lower cell spot small or absent.

\**naga*, DeN. (33-38). The Silver Spotted Lancer. Assam to Burma, Malay Peninsula, Sumatra, Java, Borneo, ? Philippines. R. (= *pellonia*, Fruh, E. Java).

I. 71. *Plastingia*.—The Lancers. (Plate 32)—*contd.*

14 (13). Below spots pale yellow. Above yellow markings prominent; upf lower cell spot well developed.

*tessellata valenia*, Fruh. (33-40). The Straw Spotted Lancer. Dawnas to S. Burma. Malaya. R.

β. Transitional to next  
*tessellata palawata*, Stg. Palawan.

γ. Larger. Uph pale areas much lighter.

*tessellata tessellata*, Hew. (40-45). Celebes. (= *eulepis*, Fd).

δ. Smaller. Above blue-black, cilia white. ♀ with white instead of yellow spots below.

*tessellata mangolina*, Fruh. (35-40). Sula Mangoli and Besi.

15a (8b). F v5 bent down at origin. Unh unmarked.

*Corissa* Group.

15 (16). Upf no spot in 4. Uph discal yellow area small or absent, cilia yellow. Below apex F and all H yellow, veins paler.

α. Above unmarked.

*corissa tytleri*, Evans. (30). The Plain Yellow Lancer. Nagas. VR.

β. Upf prominent discal yellow spots in 2, 3, apical in 6-7 and 2 cell spots, non-hyaline spot in 1b.

\* *corissa indrasana*, El. Dawnas to S. Burma, Malaya, Sumatra, Java. R. (= *latonia*, Stg, MS: *patmapanu*, Fruh, Java).

γ. Larger. Uph discal yellow area larger and in ♀ paler and occupying half the wing. Unh darker.

*corissa corissa*, Hew. (40-45). Borneo. Pulo Laut. (= *drancus*, Pl).

16 (15). Upf with a spot in 4, over the spot in 3, no spot in 1b and basal streak obscure; spots yellow. Uph plain. Below apex F and all H overlaid dark ochreous scales, unmarked.

\* *pugnans*, DeN. (34-36). The Pugnacious Lancer. Dawnas to S. Burma, Malay Peninsula and Islands. R.

I. 72. *Lotongus*.—The Palmers. (Plate 31).

1 (2a). Unh no pale band. Upf spots white.

α. Upf hyaline spots cell, 2 and 3 large and conjoined, spot in 3 to base 3, opaque yellow spot in 1b against v1. Uph costa and apex to v7 whitish yellow. Unf discal spots continued to costa and broadly to dorsum. Unh termen white from apex to mid 3.

\* *calathus calathus*, Hew. (44-46). The White Tipped Palmer. Tavoy to S. Burma, Siam, Malaya, Sumatra, Palawan. (= *aliena*, Stg, Palawan).

β. Upf spots smaller and separate: ♂ double (♀ single) spot in cell, quadrate (♀ oblique) spot mid 2, small spot in 3, only obscure spot in 1b in ♀. Unf discal band continued to costa and a large white spot in 1b: unh apex may be yellowish white.

*calathus schædia*, Hew. Siam, Malaya, Sumatra, Borneo. (= *traviata*, Plotz: *surus*, Mab: *maculatus*, Dist).

γ. Similar to *schædia*, but the spots may be reduced to dots in 2, 3.

*calathus parthenope*, Weymer. Nias.

I. 72. *Lotongus*.—The Palmers. (Plate 31)—*contd.*

♂. Similar to *calathus* but the cell spots may be divided and the spots in 2, 3 separate: always with apical spots in 6-8.

*calathus salates*, Mab, Java.

2a (1). Unh with a pale band.

2 (3a). Unh dull white band from v1 to v8. Upf with prominent white spots.

*taprobanus*, Pl. (55-60). Celebes. (= *mythecoides*, DeN).

3a (2). Unh band yellow.

3 (4a). Uph tornus and dorsum yellow, joining a broad central yellow area: unh central yellow band very broad, from v1 to costa, parallel to termen. Upf double white spot in cell, spot mid 2 and a spot in 3 against its outer edge. Unf apex paler, cell spot joined to costa by a yellow area. Antennal club white below.

a. Upf apical spots present. Uph yellow area restricted and on unh not reaching tornus.

*onara adorabilis*, Fruh. (42). Malaya, Sumatra. VR.

β. Upf apical spots absent and discal spots reduced. Uph yellow area more extensive and on unh tornus entirely yellow.

*onara onara*, But. Java, Borneo. VR. (?= *excellens*, Stg, Palawan).

4a (3). Uph dorsum dark brown. Below chocolate brown, dorsum F much paler: unf cell spot continued to costa by a yellowish spot: unh a narrow yellow band from basal  $\frac{1}{2}$  dorsum to mid costa, interrupted at v1b. Upf no apical spots.

4 (5). Upf double white spot in cell, large spot in 2 and 3, opaque spot in 1b. Uph tornal cilia yellow and central yellow area from v1b to v7. Unh band broader, expanding towards costa, slightly curved. H excavated at v1b and lobed. Below purple washed, veins pale.

a. Upf cell spots touching or conjoined to a single spot, spots in 2 and 3 separate. Uph central yellow band prominent.

*sarala sarala*, DeN. (42-44). The Yellowband Palmer, Assam.

R.

β. As *sarala*, but upf spots conjoined.

*sarala conjuncta*, nov. (40). Bharno. VR.

γ. Larger. Upf cell spots separate.

*sarala chinensis*, nov. (54). W. China. ? Tonkin. VR.

δ. As *chinensis*, but spots upf much reduced. ♂ unh no yellow band, obscure in ♀.

*sarala quinquepunctata*, J and T. (46-50). Hainan. R.

5 (4). Upf only rounded pale yellow spots in 2 and 3. Uph unmarked and cilia uniform dark brown. Unf an upper spot in cell. Unh band narrow and straight, nearer base. Below chocolate brown, no purple wash and veins not pale. H termen even.

*avesta*, Hew. (44-48). The Malay Yellowband Palmer. Dawnas to S. Burma, Borneo, Pulo Laut. VR. (= *tamiata*, Stg).

I. 73. *Zela*.—The Redeye Palmers.

Above dark brown with white or pale yellow hyaline spots on F. Uph unmarked, cilia yellow, broadly so at tornus.

I. 73. *Zela*.—The Redeye Palmers—*contd.*

1 (2a). ♂ uph no tuft : upf with a broken black seam from mid v1 to just after base 3, where it meets a small glandular patch at base 3, angled at v2; uph disc clothed long hairs. Upf single lower cell spot in ♂, double in ♀, oblique spot mid 2, spot in 3 and apical in 6. Unf dark brown, costa overlaid dark ochreous scales and dorsum in ♀ pale brown, in ♂ overlaid centrally pale ochreous scales. Unh chestnut brown, basally paler, a pale yellow spot end cell.

a. Larger. Upf and unf outwardly conspicuously paler.

*zeus optimus*, Fruh. (46-47). The Redeye Palmer. Assam. Tavoy. VR.

β. Smaller. Upf and unf not paler outwardly. Unf unmarked. Cell H shorter.

*zeus zeus*, DeN. (44-46). Sumatra, Pulo Laut, Borneo, Mindoro.

γ. Similar to *zeus*, but considerably larger.

*zeus major*, nov. (52). Mindanao, Philippines.

2a (1). Uph a conspicuous tuft of recumbent hairs from near base, overlying the cell. Cell H unusually short =  $\frac{1}{4}$  wing and lower angle bent up at origin v3 at right angles to v6, v4 arising half way between, no trace of v5, v2 opposite v7.

2 (3). ♂ upf with a whitish seam as in *zeus*, dorsum straight : unf a black patch of modified scales about dorsum. Above dark brown, unmarked : uph tuft dark brown, turning black. Below brown, unmarked. ♀ ?

*zero*, nov. (50). Sandakan, N. Borneo. VR.

3 (2). ♂ upf no brand, dorsum bowed : unf dorsum and uph costa polished. Above brown : upf white hyaline spot base 3 (smaller in ♀) and narrow vertical spot in 2 below (absent in ♀). Below ♂ warm brown, apex F conspicuously paler : ♀ paler dull brown, margin H and disc F broadly dark brown : in ♂ dcu F and H yellow.

*zenon*, DeN. (45-47). Borneo. Pulo Laut. Palawan. VR.

I. 74. *Acerbas*.—The White Palmers. (Plate 32).

Above dark down with white hyaline spots F and a white central band H; F comparatively small spots in 2 and 3 and apical in 6-8, no spot in 1b. H lobed and excavated at v1b and tornal cilia white. Unh broad white central band continuous from mid dorsum to costa before apex.

1 (2a). Unh white band connected broadly to dorsum in space 3. Upf no cell spot and unf no spot in 1b. Uph white band to v4. Unh white band silvery. Body white below, dark brown above.

*\*anthea*, Hew. (30-43). The White Palmer. Dawngas to S. Burma. Siam, Malay Peninsular and Islands. Philippines. R. (= *tagiadoides*, Fruh : *ciliatus*, But).

2a (1). Unh white band not connected to termen.

2 (3). Unf single upper spot in cell immediately over the spot in 2. Unh band dull white. Uph white band to v6. Unf large white spot in 1b in ♀. Body whitish above, striped below.

I. 74. *Acerbas*.—The White Palmers. (Plate 32)—*contd.*

*duris martini*, Dist. (38-48). Sumatra. Borneo. Pulo Laut.

β. Uph white band sharply defined. Below purple wash over dark areas, especially at apex F. Unh white band yellow in 7 and 8, not contracted at costa.

*duris duris*, Mab. Philippines. (= *mabillei*, Stg, MS).

3 (2). Upf 2 spots in cell well behind the spot in 2. Unh band glistening white, very broad. Uph ♂ white band only to v1, thence obscurely whitish to v4; in ♀ white band to v4. Body white above and below. Unf mid dorsum whitish.

\**nitidifasciata*, El and Ed. (48-50). The Silver Palmer. Dawnas to S. Burma, Selangor, Sumatra, Borneo, Labuan. R.

I. 75. *Zea*.—The Silver and Yellow Palmer.

Above dark brown. Upf prominent yellow separate hyaline spots; across cell from origin of v3; in 2  $\frac{1}{4}$  along v2, in 3  $\frac{1}{3}$  along v3. Uph costa before apex whitish. Unh dark brown with a very broad silver band from mid v1 to costa behind apex, 5 mm wide.

*mytheca mytheca*, Hew. (48). Victoria Pt., S. Burma. Malaya. Sumatra. Borneo. VR.

β. Upf unmarked. Unh normal.

*mytheca kala*, nov. Nias.

I. 76. *Eetion*.—The Whitespot Palmer.

Above dark brown with hyaline spots F and H; upf with an upper cell spot, large spot in 2 vertically below it, small spots in 1b, 3 and 4, apical dots in 6-8 and sometimes 2 dots in 5. Uph a transverse row of hyaline white spots separated by veins in 1-4; dorsum dull whitish. Unh basal area to v8 shining white from the base to the discal spots.

*elia*, Hew. (50). S. Mergui, VR. Malay Peninsula, Sumatra, Borneo. (= *eburus*, Plotz; *ayankara* and *magniplaga*, Fruh are the very similar races from Sumatra and Borneo).

I. 77. *Unkana*.—The Hoary Palmer. (Plate 32).

1 (2). Above ♂ dark brown, ♀ black. Upf large hyaline spots, pale yellow in ♂ and white in ♀; in cell behind origin of v3, in 3  $\frac{1}{2}$  along v4 and in 2 midway between; sub apical spots in 4 and 5 near margin and apical in 6-8. Uph plain in ♂, in ♀ lower discal area to base and dorsum white. Unf ♂ apex broadly paler, veins black, some purple white scales and violet washed; in ♀ large whitish suffused spots before termen in 3, 4 and 5. Unh in ♂ dark brown with obscure purple wash, veins black, whitish central area extending to base 7, obscurely paler between veins near termen; ♀ with a broad transverse white area crossed by black veins from base to below apex.

\**attina*, Hew. (64-72). The Hoary Palmer. Bassein to S. Burma, Malay Peninsula and Islands. NR. (= *batara*, Dist; *lat-reillei*, Fd; *cruda*, HS; *anitta*, Plotz. The very similar race from the Philippines is *mabillei*, Stg = *paluwana* and *mindanensis*, Fruh).



I. 77. *Unkana*.—The Hoary Palmer. (Plate 32)—*contd.*

♀ var. *flava*, nov. Tonkin and S. Shan States, Burma. VR. Above blue-black; orange instead of white areas and the tornus yellow: upf an orange basal dorsal streak: thorax and body banded blue-black and orange. Below all veins prominently black: unf apex and costa bluish white: unh yellow, becoming orange tornally with a subternal blue-black band from v3.

2 (1). Above dark brown with large conjoined bright yellow hyaline spots on F, forming a broad central band from 1b-3 and cell, apical spots in 6-7. Unf lower part of spot in 1b whitish and unh margin broadly paler.

*harmachis*, Hew. (53-55). The Orange Palmer. Malay Peninsula, Sumatra, Banka. VR. (= *staudingeri*, Dist).

I. 78. *Hidari*.—The Palmers. (Plate 32).

1 (2a). Upf with large conjoined hyaline yellow spots as in *harmachis*, no apical spots. ♂ upf a seam from mid 1b to base 4. Unf apex grey powdered and unh 2 grey bands as in *Gangara thyrasis*. Antennæ yellow banded below club.

*ozias*, Hew. (54). The Javan Palmer. Java. VR.

2a (1). Upf hyaline spots on F pale yellow, well separated; spot across cell, in 2, 3, semi-hyaline spot in 1b against v1, apical spot in 6 only. No ♂ brand.

2 (3, 4). Upf spot in cell with its centre against the origin of v3; spot in cell  $\frac{1}{2}$  along v4; spot in 2 not reaching origin of v3, well separated from cell spot, its inner edge in line with the centre or outer edge of the cell spot. Below dark brown, costa and apex F and all H pale brown with a faint purple wash; some rather obscure small dark spots about apex F and discal spots in 1c-6 on H as well as a pale yellow spot unh in cell under the origin of v7.

\**irava*, M. (54-58). The Greasy Palmer. Burma, Malay Peninsula and Islands. NR. (= *hypæpa*, Hew; *thrax*, Hub in error: ? *thrachimima*, Verity, Canton).

3 (2, 4). Above as *irava*. Below pale yellow, unh evenly striated, a brown streak near costa and near dorsum.

*bhawani*, DeN. (56). The Veined Palmer. Lakhimpur, Assam. Arracan Coast, Burma. Langkawei Islands, Malaya. VR.

4 (2, 3). Upf discal spot in 2 shifted in to the origin of v3, joining cell spot. Unh spot in cell white, smaller. Spot in 1b F more upright and diffused below. Below darker, dark spots obscure or absent.

*dæsæna*, Martin. (55-58). The Sumatran Palmer. Sumatra. VR.

I. 79. *Pirdana*.—The Green Palmers. (Plate 32).

Above unmarked, no hyaline spots. H tornal cilia orange.

1 (2a). Unh striped. ♂ upf obscure raised seam along middle third of v1 and basal half of v2. Antennæ plain.

α. ♂ above dark brown, dark green gloss along costa F, only the cilia at the tornus orange: ♀ basal half F and  $\frac{1}{2}$  H metallic



I. 79. *Pirdana*.—The Green Palmers. (Plate 32)—*contd.*

dark green, narrow tornal orange area H. Below black, washed indigo blue with veins bordered green. Large.

*\*ismene major*, nov. (50-58). The Green-striped Palmer. Sikkim to N. Burma. R.

β. As *major*, but smaller: unf dorsum whitish instead of pale brown in ♂, white in ♀.

*ismene rudolphii*, El and DeN. (42-45). Karens to S. Burma. Siam. China. Hainan. Malaya. Sumatra. R.

γ. As *rudolphii*, but ♂ uph has a narrow orange tornal area.

*ismene hyela*, Hew. (42-45). Java. Borneo. Palawan. (= *scanda*, Fruh).

δ. ♂ above dark green with a metallic sheen on F and at base H: tornal orange area broad. Below bright bluish green with whitish veins.

*ismene ismene*, Fd. (50-60). Celebes.

2a (1). Unh green, unstriped.

2 (3). Antennæ plain. ♂ with brands as in *ismene*.

a. Above dark brown, costa F glossed indigo blue: only tornal cilia orange.

*distanti distanti*, Stg. (50). The Plain Green Palmer. Sikkim (Ind. Mus). Karens to S. Burma. Malaya. Sumatra. Nias. Borneo. R. (= *niasica*, Fruh).

β. Uph with a narrow tornal orange area.

*distanti pavona*, DeN. Java.

3 (2). Antennæ shaft white above to base club, which is white banded. ♂ without brands: above dark brown, bases shining metallic bluish green, elsewhere purple washed: uph tornal yellow area rather broad.

*albicornis* El and Ed. (50). Kina Balu, Borneo.

I. 80. *Creteus*.—The Nonsuch Palmer.

Above very dark brown, ochreous hairs at bases and on body and dorsum F; small pale yellow white hyaline spots F and H. Upf 2 spots in cell, spots in 1b, 2, 3 and apical 6-8; uph spot in cell, 2, 3, 6 and mid 7, tornal cilia broad yellow, terminal border from dorsum to v3; unh terminal yellow border from tornus to just above 4 and angled inwards in 2. ♀ spots above larger.

a. Unh yellow border comparatively narrow.

*cyrina parca*, DeN. (46-48). Assam. VR.

β. Unh yellow border considerably broader.

*cyrina cyrina*, Hew. Borneo. (= *meleugrina*, Stg).

I. 81. *Gehenna*.—The Swollen Aces. (Plate 32).

Above dark brown with pale yellow spots on F; 2 small spots in cell (upper may be absent or minute), oblique narrow spot in 2 immediately under cell spot, small spot in 2, 3 and apical spot in 6. In ♀ spots are larger, spot in 2 is quadrate, small spots in 4 and 7 and non-hyaline spot in 1b. Unf dorsum outer half white in ♀.

I. 81. *Gehenna*.—The Swollen Aces. (Plate 32)—*contd.*

1 (2). Unh unmarked. Below dark brown, costa F and all H overlaid sparse yellow scales. H scv and v8 hair-pinwise. ♂ uph costa plain. Cilia ashy.

*grææ*, DeN. (35). The Plain Swollen Ace. Malay Peninsula (Bukit Tanga), Sumatra. VR. (*palawanica*, Strand, presumably Palawan race).

2 (1). Unh marked with a series of small dark discal spots. H v8 and scv normal. ♂ uph costa polished. Cilia ochreous.

a. Below costa and apex F and all H overlaid ochreous green scales, leaving on H very obscure dark discal spots in 1c-6 and cell; in ♀ the spot in 2 is white. ♂ uph greenish hairs on disc.

\* *abima dawna*, Evans, (35). The Spotted Swollen Ace. Dawnas to Mergui. VR.

β. Below costa and apex F and all H clothed greyish yellow scales: unh prominent dark discal spots in 1c-6, increasing in size posteriorly and a spot in cell.

*abima angulifera*, El and Ed. Mindoro, Philippines.

γ. Upf cell spots conjoined and above clothed ochreous hairs: unh 5 obscure brown spots.

*abima abima*, Hew. Celebes. (= *sewa*, Plotz).

I. 82. *Pithauria*.—The Straw Aces. (Plate 32).

Above dark brown; pale yellow (♀ white) spots on F, double in cell, mid 2, in 3 and apical 6-7 (rarely 8); the spots in the ♂ of the first 2 species may be much reduced or entirely absent, especially those in the cell, but are prominent below.

1a (3). Unh no prominent pale spots and no brand in ♂.

1 (2). ♂ base and dorsum upf and all H except for the broad and dark border clothed straw coloured hairs, dense on H. Unf area mid dorsum to cell and v2 pale yellow. Below brown, apex and costa F and all H clothed greyish ochreous scales; obscure indications of spots unh.

*stramineipennis*, WM. (44-50). The Light Straw Ace. Sikkim to Burma (Tavoy), W. China, Malay Peninsula, Borneo, Sumatra. NR. (= *weymeri*, Pl).

2 (1). ♂ darker, clothing of greenish hairs above and ochreous scales below. Unf no pale area mid dorsum; unh pattern not quite so obscure.

*murdava*, M. (36-50). The Dark Straw Ace. Sikkim to Burma. Malay Peninsula, Borneo. NR.

3 (1a). ♂ with brand upf. Above ♂ base and dorsum F and all H except costa clothed greenish hairs. Below dark brown, costa and apex F and all H closely overlaid golden ochreous scales; unh small pale yellow spots in 2, 3, 6 and base 7; may be dots in 4, 5 and 1c. ♀ unf small white spot in 1b against v1 and tornal spot in 1b; unh chestnut brown with large silvery white conjoined discal spots in 1c-5, where it joins a broad silver streak reaching to base 6, above which there is another silver streak filling most of 7, also a silver spot in 1c under cell: the markings unh are very variable and sometimes the spots are as small as in the ♂.

I. 82. Pithauria.—The Straw Aces. (Plate 32)—*contd.*

\* *marsena*, Hew. (44-50). The Branded Straw Ace. Assam to Burma, Malay Peninsula, Tonkin, Sumatra, Nias, Java and Borneo. NR. (= *aitchisoni*, WM and DeN; *glauca*, Stg; *uma*, DeN; *ornata*, Fd; *subornata*, Plotz). The ♀♀ of these 3 species appear to be extremely rare.

## I. 83. Halpe.—The Aces. (Plate 32).

Above dark brown; upf normally 2 cell spots, 2 discal (in 2 and 3), 3 apical (6-8); cell spots may be conjoined or one or both may be absent and the apical spot in 8 is often absent (*hieron* is spotless); ♀ usually has a non-hyaline spot in 1b (present in ♂ *masoni*); spots white to golden. Uph unspotted (except *submacula*), but there may be a yellow patch on the disc (*decorata*, *honorei* and *masoni*) or more usually dull ochreous hairs. Below dark brown, costa and apex unf and all unh overlaid differently coloured scales; unf apex may be spotted; unh may be plain, marked with dark or pale spots or with a pattern. The ♂ brand is missing in *honorei*, *masoni*, *astigmata* and *hieron*; it may be just a seam from v1 to base 3 or consist of 2 whitish pouches, v1 may be distorted and v2 bent up.

1a (22a). Tegumen seen from the side broad and divided: clasp with no lateral appendages. Upf normally 2 cell spots, may be conjoined.

1b (6a). Tegumen seen from the front undivided and without side horns. ♂ with a brand. Antennæ above plain.

Separata Group.

1c (3a). Upf 2 separate cell spots.

1 (2). Unh veins conspicuously pale; irregularly chequered with dark brown spots on a whitish ground, discal spot in 5 very large. Upf spot in 2 remote from the cell spot. Unf broad pale discal streak in 1b. Palpi and body white below.

a. Below markings clearly defined.

*albipectus prominens*, nov. (29). The Silverbreast Ace. N. Shan States. NR.

β. Below markings more or less suffused.

*albipectus albipectus*, DeN. Ataran to S. Burma. NR.

2 (1). Unh dark purple brown with irregular white basal area to middle. Upf spot in 2 in line with the cell spots. Unf dorsum pale to v2. May be unspotted above: variable.

*hyrtacus*, DeN. (36). The White-branded Ace. S. India, Coorg, N. Kanara. VR.

3a (1c). Upf cell spots conjoined and spot in 2 under cell spot. Unf dorsum pale to v2.

3b (5). Unh plain.

3 (4). Unh clothed olive ochreous scales.

a. Smaller. Cilia more or less chequered brown and white.

*separata separata*, M. (31). The Chequered Ace. Kumaon, Sikkim. R.

β. Larger. Cilia much more prominently chequered.

*separata magna*, nov. (36). Manipur, Nagas, Tulang. R.

I. 83. Halpe.—The Aces. (Plate 32)—*contd.*

4 (3). Unh clothed ochreous brown scales. Cilia plain or faintly chequered.

\**grahami*, Evans. (33). Graham's Ace. Kumaon to Manipur. R.

5 (3b). Unh yellow with small black spots in 2, 3, 7.

*subflava*, Leech. (28). W. China.

6a (1b). Tegumen seen from the front divided or with side horns or both.

6b (18a). Unh never ferruginous nor yellow.

6c (15a). Antennæ above plain.

Varia Group.

6d (10a). Upf cell spots conjoined.

6 (7a). Unh with prominent silver streaks on an ochreous brown ground. Cilia more or less chequered. Unf with yellow submarginal spots. ♂ brand prominent.

*bivitta*, Ob. (32). W. China. (=ab *albititta*, Ob).

7a (6). Unh no silver streaks, only obscure spots.

7 (8a). ♂ brand faint or absent. Upf spots pale yellow.

a. Unf cilia prominently chequered. Unh bright ochreous brown, pale spot in 6 and obscure dark discal spots below, but variable.

*lucasi hyrie*, DeN. (35). Lucas' Ace. Sikkim to N. Shan States. R.

β. Larger. Cilia obscurely chequered. Unh plain brown, overlaid ochreous green scales.

*lucasi merea*, nov. (38). Pemako, Mere, SE. Thibet.

γ. Unf apex vivid rufous. Unh overlaid olive rufous scales, series of 4 obscure black discal spots. Cilia chequered.

*lucasi lucasi*, Mab. (38). Mupin, W. China.

8a (7). ♂ brand prominent.

8 (9). Upf spots white. Unh faint indications of discal whitish spots on an ochreous brown ground. Wings produced.

*cænis*, Leech. (42). W. China.

9 (8). Upf spots golden yellow. Unf cilia plain. Unh overlaid ochreous green scales.

a. Unh plain. Upf lower spot in cell prolonged towards base, upper spot narrow.

*aina aina*, DeN. (36). The Garhwal Ace. Garhwal, Sikkim. R.

β. Unh distinct traces of 2 rows of suffused pale spots on the disc. Upf cell spots more equal.

*aina debilis*, El and Ed. (35). Assam, W. China. VR.

γ. Similar, but wings more prolonged and upf cell spots conjoined to a single round spot.

*aina baileyi*, South. (34). SE. Thibet. Tali, Haut Yunnan.

10a (6d). Upf cell spots separate.

10b (14). ♂ upf brand prominent.

10c (13). Unh veins concolorous with the ground.

10d (12). Unh ochreous brown or overlaid ochreous brown scales.

10 (11). Unh overlaid ochreous brown scales, 2 rows of very obscure small yellow discal spots. Palpi more porrect and wings more rounded than usual.

*blanchardi*, Mab. (30). W. China.

I. 83. *Halpe*.—The Aces. (Plate 32)—contd.

11 (10). Unh ochreous brown, more or less overlaid similar scales: obscure discal and postdiscal spots or streaks.

α. Cilia chequered. Unh dorsum blackish to vlb.

*latris latris*, Leech. (35). Leech's Ace. Ta-t sien-lou, W. China.

β. Larger. Cilia plain. Recalls *Pithauria*.

*latris thandaunga*, Evans. (39). Karens, Burma. VR.

12 (10d). Unh overlaid greyish scales. Upf spots white.

α. Upf one or both cell spots may be absent. Unh rather obscure white spots in 2, 3, 6.

*gupta gupta*, DeN. (37). The Olive Ace. Garhwal to Sikkim. R.

β. Larger. Upf no cell spots. Unh brown with sparse grey scales indicating faint discal and sub-marginal bands, no spots.

*gupta fusca*, El. (42). Nagas. Bernardmyo, N. Burma. VR.

γ. Similar to *gupta*. Unh greyer, spots more elongate. Unh cilia more or less chequered.

*gupta leechii*, nov. (37). Wa-ssu-Kow, China.

13 (10c). Unh veins black, ground ochreous brown, prominent white spots in 2, 3, 6. Upf upper cell spot absent.

*varia*, Murray. (34). Japan.

14 (10b). ♂ brand absent. Upf lower cell spot prolonged towards base. Cilia prominently chequered. Unh yellow streaks and markings prominent.

*perbella*, Hering. (33). Tsha-Jiu-Shan, China.

15a (6c). Antennæ above white banded below apiculus.

Cerata Group.

15b (17). Uph no sharply defined spots. Upf spots white.

15 (16). Unh dark brown, overlaid greenish ochreous scales, small white dots in 2 to 6 and 2 spots in 7, but many or all of the spots may be absent. Upf cell spots conjoined. ♂ no brand.

*astigmata*, Swin. (39). The Southern Spotted Ace. Coorg, N. Kanara, S. India. NR.

16 (15). Unh not overlaid ochreous green scales, marking larger, more constant and similar, but only a single basal spot in 7. Uph white spots from 2-4 below show obscurely. ♂ with brand upf.

\* *cerata*, Hew. (38). The Northern Spotted Ace. Sikkim to Karens. NR.

17 (15b). Uph prominent pale yellow spots in 2, 3, 6. Unh ochreous brown with numerous yellow spots, the discal and sub-marginal series being conjoined in 4-5, cell yellow and large spot beyond, double streak in 1c. Upf cell spot double. ♂ with brand.

*submacula submacula*, Leech (42). Chang Yang, China, Tonkin.

β. Wings broader. Darker with smaller markings.

*submacula horishama*, Matsum. (40). Formosa. (= *ara*, Fruh).

18a (6b). Unh ochreous or ferruginous.

Masoni Group.

18 (19a). Upf spots small, whitish, ♂ brand prominent: uph plain. Unh a ferruginous apical band. Upf cell spots separate in ♂, may be conjoined in ♀.

I. 83. Halpe.—The Aces. (Plate 32)—*contd.*

*a.* Unh ferruginous brown: small white discal spots in 2, 3 and there may be obscure spots in 4, 6 also.

*sitala sitala*, DeN. (37). The Tamil Ace. Nilgiris. VR.

*β.* Unh dark ferruginous, with disc much brighter, continuous row of dark ringed small white spots from 2 to 7.

*sitala cochina*, nov. (38). Anamalai Hills, Neliampathy Hills, Cochin, S. India. VR.

*γ.* Unh as *cochina*, but duller, no spots, but a dark irregular narrow discal line. Upf spots very small.

*sitala evershedi*, Evans. (37). Palnis Trivandrum, Travancore, S. India. VR.

19a (18). Upf spots bright yellow.

19 (20a). Uph cilia dull ochreous, broadly chequered at end veins. ♂ unh dull chrome yellow, small black discal spots in 1c-7: unf sub-marginal yellow spots at apex and cell yellow: upf lower cell spot continued towards base: uph dull yellow streak on disc: brand upf present. ♀ very different: unh ferruginous with suffused obscure dark spots: upf lower cell spot absent.

\* *decorata*, M. (34). The Ceylon Ace. Ceylon. R.

20a (19). Uph cilia yellow, unchequered. Unh yellow, small black discal spots in 1c-7 more or less prominent. ♂ no brand.

20 (21). Uph yellow area broad, diffused. ♂ upf no spot in 1b or very obscure. Antennæ above plain.

*honorei*, DeN. (34). The Madras Ace. S. India to N. Kanara. R.

21 (20). Uph yellow area narrow, sharply defined. ♂ ♀ double spot in 1b. Antennæ above yellow banded behind apiculus.

\* *masoni*, M. (32). Mason's Ace. Chin Hills to S. Burma. Tonkin. R.

22a (1a). Tegumen seen from the side narrow, undivided, though centre may be pressed forward, long horns always present. Clasp usually with lateral appendages.

Sulphurifera Group.

22b (30a). Antennæ above white banded behind apiculus or at least white on inside of apiculus. ♂ with brand.

22 (23a). Upf 2 cell spots, lower shifted towards base: spots white. Cilia prominently white. Unh dark brown, purple glossed, with whitish markings, consisting of basal streaks and small discal spots.

*insignis*, Dist. (34). The White-fringed Ace. Mergui, S. Burma. W. Siam. Malaya. Sumatra. Borneo. R.

23a (22). Upf single upper cell spot.

23 (24a). Unh dark brown with a purple gloss, small white discal spots 1c-6 (may be absent). Upf spots small, white. Cilia whitish H, brown on F.

*fasciata*, El and Ed. (40). Borneo.

24a (23). Unh no purple gloss, overlaid ochreous or olive brown scales.

24b (29). Unh no continuous pale band.

24c (26a). Unh overlaid olive scales, with more or less prominent discal dark spotting.

24 (25). Unh with pale yellowish discal spots in 1c-6. Upf spots very small in ♂, cell spot absent.



I. 83. *Halpe*.—The Aces. (Plate 32)—contd.

*palawea*, Stg. (37). Palawan.

25 (24). Unh no pale discal spots. Upf spots white, well marked. Wings produced, F pointed, H excavated before tornus. Unf traces of a brownish fascia. Cilia brownish white F, brown H.

*sikkima*, M. (38). The Sikkim Ace. N. Kanara. VR. Sikkim to S. Burma. Malaya. Hainan. Sumatra. NR. (= *selangora*, Swin: *knyveti*, Evans in error).

26a (24c). Unh overlaid ochreous brown scales. Upf spots pale yellow.

26b (28). Cilia above greyish.

26 (27). Unh unmarked, but dorsum broadly paler. Unf a pale dash just below and conjoined to the cell spot. H tornus prolonged and termen excavated.

*knyveti*, El and Ed. (42). Knyvett's Ace. Sikkim to Nagas. VR.

27 (26). Unh yellow spots in 1c-6 and unf sub-marginal yellow spots. Unf sometimes pale dash below cell spot. H tornus more rounded. Midway between *knyveti* and *kumara*. The first species with lateral appendages to the clasps, as have all the remainder.

*tytleri*, nov. (38). Tytler's Ace. Sikkim to Assam, Manipur. R.

28 (26b). Cilia above brown, faintly chequered unf. Unh plain. Wings more rounded than usual.

*kumara kumara*, DeN. (34). The Plain Ace. Sikkim to Nagas. NR.

β. Larger.

*kumara perfossa*, South. (40). Tulang, S.E. Thibet.

29 (24b). Unh prominent white or pale yellow band continuous from vl to apex. Cilia greyish.

α. Large and spots upf large. Unh clothed ochreous brown scales: band  $2\frac{1}{2}$  mm. Unf with sub-marginal spots at the apex.

\**zema zema*, Hew. (35). The Banded Ace. Sikkim to S. Burma. Malaya. Tonkin. Borneo. C.

β. Smaller, darker: upf spots smaller, 2 and 3 separate. Unh discal band narrow 1 to  $1\frac{1}{2}$  mm. Unf sub-marginal spots obscure.

*zema ormenes*, Plotz. (32). S. Burma, Mergui. Sumatra. Nias. NR. (= *vilasina*, Fruh).

γ. As *zema*, but smaller. Unh band yellower.

*zema vistara*, Fruh. (33). Java.

δ. Unh white band proximally indented.

*zema mahapara*, Fruh. (34). Palawan.

30a (22b). Antennæ above plain.

30b (32a). Upf with 2 cell spots.

30 (31). Unh no prominent pale band, densely overlaid rather pale ochreous green scales, leaving a series of dark discal and conjoined sub-marginal spots. Upf cell spots conjoined and spots in 2 and 3 overlap. Cilia greyish, wings rounded.

*burmana*, Swin. (31). Swinhoe's Ace. N. Shan States to Ataran. Siam. Tonkin. NR.

31 (30). Unh broad continuous irregular white band mid 1c to apex, spots in 6, 7 conjoined and pushed out, a spot in cell and usually at base 7: usually some small white discal spots beyond the band in 3-5: variable number of small sub-marginal spots in 1c

I. 83. *Halpe*.—The Aces. (Plate 32)—*contd.*

to 3. Unf prominent white sub-marginal spots. Upf cell spots separate.

*moorei moorei*, Watson. (32). Moore's Ace. S. India. Mussoorie to Burma. Andamans. Hongkong. Siam. Sumatra. NR. (= *teliga*, Swin: *beturina*, Fruh, Annam: *porus*, Mab, Thibet).

β. Smaller and spots smaller. Unf veins towards apex pale. Cilia plain. Unh band yellower.

*moorei basilana*, Fruh. (30). Philippines. (= *joloana*, Fruh, Jolo Is.).

32a (30b). Upf at most a single upper cell spot.

32b (35a). Unf cilia more or less chequered. ♂ with brand.

32 (33a). Unf sub-marginal spots continued into 1b by 2 spots. the lower elongate: long narrow dash under apical spots. Unh central band very prominent, also sub-marginal spots, basal streak present. Upf prominent suffused spot beyond end cell.

*nephele*, Leech. (40). Omeishan, W. China.

33a (32). Unf sub-marginal spots not below v2.

33 (34). Unf sub-marginal spots suffused and coalesced or absent.

α. Unh central pale yellow band continuous, prominent, sub-marginal spots prominent: overlaid ochreous green scales. Above dark brown, bases clothed greenish hairs.

\**egena ceylonica*, M. (32). The Ceylon Ace. Ceylon. S. India. NR.

β. Unh uniform vinous brown, central band and sub-marginal spots may show obscurely. Unf sub-marginal spots obsolete. Above uniform dark shining brown, spots F reduced and may be absent.

*egena egena*, Fd. (34). Ceylon (Ratnapura, Haldummulle, Mt. Keliya). R. (= *brunnea*, M).

34 (33). Unf sub-marginal spots well defined.

α. Unh dark brown: central white band and sub-marginal spots clearly defined. Upf spots in 2 and 3 overlap.

*homolea aucma*, Swin. (36). The Indian Ace. Sikkim to Assam. NR.

β. Unh markings suffused and darker, prominent row of black spots showing between the central and sub-marginal pale markings. Upf discal spots large, those in 2 and 3 completely overlapping.

\**homolea marta*, Swin. (36). Sikkim to Assam NR, flying with *aucma* as a seasonal or varietal form. (= *perara* and *wantona*, Swin).

γ. Unh similar to *marta*. Upf spots smaller, discal spots in 2 and 3 not overlapping.

*homolea homolea*, Hew. (36). Nagas to Karens. NR. Singapore.

η. Smaller. Unh much yellower and markings suffused. Upf spots large. Cilia rather faintly chequered.

*homolea veluvana*, Fruh. (33). Java.

(Note. *nephele*, *egena* and *homolea* have similar genitalia).

35a (32b). Unf cilia plain.

35b (42a). ♂ unf space 1b entirely dark.

35c (37a). Unh with a well defined pale central band.

35 (36). Tegumen horns divided. Unh band yellow. ♂ with brand.

I. 83. Halpe.—The Aces. (Plate 32)—*contd.*

*flava*, Evans. (32). The Tavoy Sulphur Ace. Karens to S. Burma. Malayana. NR.

36 (35). Tegumen horns undivided.

α. Unh band compact, whitish yellow. ♂ with brand.

*auriferus diana*, nov. (30). The Similar Ace. Ataran to Tavoy. R.

β. Unh band more broken, narrower, bright yellow. ♂ no brand.

*auriferus auriferus*, El and Ed. (29). Nias. (= *hazis*, DeN).

γ. Unh band broken, broad, yellowish white. ♂ with brand.

*auriferus toxopea*, nov. (30). W. Java.

37a (35c). Unh no defined central band other than suffused traces.

37b (41). Upf discal and apical spots always present.

37c (39a). Tegumen horns ending in a simple tip.

37 (38). Tegumen horns curved in front of the tegumen.

*kusala*, Fruh. (34). The Tenasserim Ace. Sikkim to Ataran. C. S. Annam. Malaya. (= *sikkima*, Evans in error).

38 (37). Tegumen horns straight. Unh markings more suffused than usual. Smaller than *kusala*, but difficult to distinguish from *confusa* and *pagaia* except by examining the genitalia.

*brevicornis*, nov. (30). The Short-horn Ace. Karens. NR.

39a (37c). Tegumen horns curved at end between two sharp points.

39 (40). Clasp with a central and upper tooth.

*confusa*, nov. (30). The Confusing Ace. Manipur to Ataran. NR.

40 (39). Clasp without a tooth.

α. Unh sub-marginal spots fairly clearly defined and dark discal spots faint.

*pelethronix pagaia*, nov. (30). The Javan Ace. Karens to S. Burma. NR. Malaya.

β. Larger. Unh markings more suffused.

*pelethronix pelethronix*, Fruh. (34). Java.

γ. As *pagaia*; wings more pointed: upf spots smaller: unh sub-marginal spots sharply defined.

*pelethronix limbanga*, nov. (30). Borneo.

41 (37b). Above discal spots usually absent or faint, below suffused. Unh uniform olive brown.

*hieron*, DeN. (33). Sumatra.

42a (35b). ♂ unf with a central pale area in 1b.

42b (44). Unf sub-marginal spots not continued below v2. Unh central band less sharply defined. Uph disc conspicuously clothed yellow hairs. Unf cell spot bare traceable.

42 (43). Unh area between discal and sub-marginal pale markings not broken into elongate spots. Clasp simple.

*luteisquama*, Mab. (35). Mindoro, Philippines.

43 (42). Unh area between discal and sub-marginal pale markings broken into elongate spots.

α. Comparatively smaller. Clasp with 2 teeth far apart.

*sulphurifera sulphurifera*, HS. (36). Philippines.

β. Larger. Clasp with 2 teeth close together.

## I. 83. Halpe.—The Aces. (Plate 32)—contd.

*sulphurifera beturia*, Hew. (38). Celebes. Bangkei. 44 (42b). Unf sub-marginal spots continued into 1b. Unh markings suffused and narrow.  
*majuscula*, El and Ed. (36). Minahassa, Celebes. (may be a race of *sulphurifera*).

## I. 84. Onryza. The Brush Ace. (Plate 32).

Above brown, dorsum and base F and most of H clothed yellow hairs; cilia pale ochreous H, brown F. Upf with yellow hyaline spots, double in cell lower part produced towards base, spot in 1b against v1, spot mid 2, in 3 and apical in 6 and 7. Unh and apex costa and cell unf more or less overlaid ochreous scales, tending on F to form a narrow yellow sub-marginal band and on H leaving a chequered pattern, which is obscure in pale specimens.

\* *meiktila*, DeN. (30-34). Meiktila to Dawnas. R. (*siamica*, Riley and Godfrey, N. Siam, is a brighter race).

## I. 85. Sebastonyma.—The Tufted Ace. (Plate 32).

Above dark brown with pale yellow hyaline spots on F, figure of 8 spot in cell, spots in 2, 3 and apical 6-8. Uph a pale brown area mid disc. Below dark brown; unf mid dorsum whitish and a narrow pale yellow sub-marginal band. Unh broad yellow transverse band from near base at v1b to apex, a streak under v8 from origin to middle and an irregular sub-marginal line.

\* *dolopia*, Hew. (30-34). Sikkim to Karens. NR.

## I. 86. Actinor.—The Veined Dart. (Plate 32).

Above brown clothed ochreous hairs on dorsum F and all H, cilia grey; semi-hyaline pale yellow spots F and H and the veins beyond the spots pale yellow. Upf double cell spot, continuous row 1b-5 (double in 1b) and conjoined apical spots in 6-8. Uph large spot across cell and postdiscal row in 1c-5. Below paler and all veins pale yellow; Unh spots dark edged and more extensive, a spot base 7, central row 1c-7 across cell and postdiscal row from 1c-6.

\* *radians*, M. (34-42). Chitral to Kumaon at 4,000 feet. R.

## I. 87. Cupitha.—The Wax Dart. (Plate 32).

Above dark brown with yellow markings. Upf basal half costa yellow; a discal band 1b-7, the part in 1b continued along v1 towards the base; lower spot in cell over origin v3, conjoined to the band; upper end of band incurved in 7. Uph costa yellowish white, yellow transverse broad discal band from 1c-4. Cilia pale yellow H, chequered on F. Below entirely yellow except for a broad dark brown central band from base to middle on F and brown tornus F and H.

I. 87. *Cupitha*.—The Wax Dart. (Plate 32)—*contd.*

\* *purreea purreea*, M. (28-33). S. India, Sikkim to Burma, Andamans, NR. Malayana. (*purreea* was described from the Andamans and = *tympanifera*, M, Pegu: *verruca*, Mab, Sumatra, said to be darker with a narrow band: *lycorias*, Mab, Java).

β. Above yellow band very narrow.

*purreea alara*, Fruh. Philippines. Celebes.

I. 88. *Taractrocera*.—The Grassdarts. (Plate 32).

Above dark brown with pale discal spots upf in 1b-8, those in 4 and 5 shifted out; an upper cell spot beyond mid cell and a lower conjoined spot towards base. Uph spot mid cell and a discal series 1c-7, upper two often absent.

1a (9). ♂ no brand.

1b (4a). Upf spots in 4, 5, normally widely separated from those in 3 and 6, if conjoined or approximate, then to spot in 6 and not to the spot in 3.

1c (3). Above markings white and small.

1 (2). Unh no spot in 7, spot in 6 large, cell spot against upper edge of cell, no spot in 1b, but the white streak broad and prominent: overlaid greenish scales and the veins concolorous.

\* *danna*, M. (27). The Himalayan Grass-dart. Kashmir to Bhutan. NR.

2 (1). Unh a spot mid 7 and an obscure spot base 7, spot in 6 small, cell spot across cell, a spot in 1c and the white streak narrow.

a. Unh brownish ochreous, veins may be paler, but not white.

*mævius mævius*, Fab. (25). The Common Grass Dart. Ceylon.

C. (= *flaccus*, F.).

β. Unh whitish, veins white.

*mævius sagara*, M. India. NR.

γ. Unh greenish brown, veins white.

*mævius lineata*, Druce. Assam to Dawnas. Siam. NR.

3 (1c). Above markings orange yellow. Unh usually 2 spots in 7.

a. Above spots small and separate, upf no spot in 1b. Unh considerable brown suffusion, ochreous spots prominent.

\* *ceramas ceramas*, Hew. (26). The Tamil Grass Dart. Palnis, Coorg, Nilgiris. NR. (= *silhetica*, *Plotz*).

β. Transitional to next.

*ceramus lynx*, Mosch. Travancore to N. Kanara. NR.

γ. Above markings broad, conjoined, spot in 5 upf conjoined to spot in 6 and always a spot in 1b. Unh ochreous with dark spots.

*ceramas nicevillei*, Watson. Bombay. (= *corus*, Auct in error).

δ. Above orange markings forming a broad discal band with the spots in 4-5 upf conjoined to the spot in 6. Below apex F and all H dull pale ochreous, unmarked.

*ceramas oberthueri*, El and Ed. (27). Animalai Hills, S. India. VR.

η. Above similar to *lynx*. Unh ochreous brown with prominent black spots.

I. 88. *Taractrocera*.—The Grassdarts. (Plate 32)—*contd.*

*ceramas atropunctata*, Watson. (32). Chindwin, N. Burma. R. Hong Kong to S. China.

4a (1b). Upf spots in 4-5 usually conjoined to spot in 3 and anyhow nearer to the spot in 3 than to the spot in 6.

4b (7a). Unh the discal band extending to 7.

4 (5a). Unh a basal yellow spot in 7 also. Above markings very broad: upf spots in 4-5 conjoined to those in 3 and 6: cell all yellow. Unh pale yellow, base darkened, yellow spots outwardly defined by black dots.

*flavoides*, Leech. (30). W. China.

5a (4). Unh no basal yellow spot in 7.

5 (6). Unh spot in 1c slender and oblique, from basal end of spot in 2. Above markings very narrow, spots in 4, 5 upf separate from spots in 3, 6.

a. Above markings pale yellow. Unh brownish ochreous, spots nearly white.

*ardonia ardonia*, Hew. (26). Malaya, Borneo, Sumatra. (= *sumatrensis*, Plotz).

β. Above markings darker. Unh more ochreous, spots yellow.

*ardonia sangira*, Pl. Celebes.

6 (5). Unh spot in 1c in continuation of the spot in 2. Markings yellow.

a. Above markings very narrow, spots in 4, 5 detached. Unh brownish ochreous, spots pale yellow.

*ziclea samadha*, Fruh. (24). The Veined Grass Dart. Thayetmyo to S. Burma. Peninsular Siam. R. (= *aurea*, Watson MS).

β. Above markings wider and darker: upf spots in 4 and 3 conjoined.

*ziclea tissara*, Fruh. (25). Sumatra.

γ. Above markings broad: upf discal band with an even outer edge and veins not darkened.

*ziclea ikramana*, Fruh. (25). Java, Borneo.

δ. Upf discal band outwardly stepped, veins usually dark.

*ziclea ziclea*, Plotz. (26). Philippines. (= *luzonensis*, Mab).

η. Smaller. Upf edges of discal band more even.

*ziclea dongala*, nov. (24). Celebes.

7a (4b). Unh no spot in 7. Above markings broad golden yellow. Upf central black band centrally attenuated or centre absent: spots in 4, 5 usually conjoined to those in 3 and 6.

7 (8). Larger. Upf spot in 5 touches outer edge of spot in 6 but not overlapping. Back of clasp rounded. Races poorly defined.

a. Upf central band generally complete in 2 and uph discal band continued into 6.

\* *nigrolimbata quinta*, Swin. (24). The Yellow Grassdart. Ataran to S. Burma, Siam, Malaya, Sumatra, ? Borneo. R.

β. Larger. Upf dark central band usually discontinuous in 2: uph discal band rarely into 6.

*nigrolimbata nigrolimbata*, Snell. (26). Java.

γ. Upf central band complete: uph discal band just into 6.

*nigrolimbata bavius*, Mab. (25). Timor, Kisser, Dammer.



I. 88. *Taractrocera*.—The Grassdarts. (Plate 32)—*contd.*

8 (7). Smaller: yellow markings broader. Upf spots in 4, 5 coalesced and overlapping with those in 3 and 6. Back of clasp with a shoulder.

a. Upf central dark band usually complete. Uph a spot in cell. *antalcidas aliena*, Plotz. (22). Sumatra, Java. (= *myconius*, *turica* and *dschaka*, Pl: *dschalia*, Mab).

β. Upf central band discontinuous. Uph no cell spot.

*antalcidas godhania*, Fruh. Sumba. (= *kisaga*, Fruh, Lombok).

γ. Above nearly entirely yellow. Uph yellow band absorbs the cell spot and extends nearly to the base along the dorsum.

*antalcidas antalcidas*, Fd. Celebes. (= *talantus*, Pl).

9 (1a). ♂ upf with a narrow band, irregular and broken on the inner edge of the yellow discal band. Above markings broad: upf cell and costa up to apical spots yellow, spots in 5 and 6 separate. Uph discal band broad, cell spot present. Unh greenish ochreous, discal band faint and not extending above v6.

*sudodana*, Fruh. (26). Sumba. Timor (whence above description).

(Note. Certain species of the allied Australian genera *Ocybadistes* and *Arrhenes* extend into the Flores archipelago as far as Sumba).

I. 89. *Oriens*.—The Dartlets. (Plate 32).

Above dark brown with tawny markings. Upf lower part of tawny discal band central not discal as in *Padraona*, etc., i.e. spot in 1b is in the middle of 1b, spot in 2 under the origin of v3 and spot in 3 reaches base 3; base and costa always dark; spot in 4 to base 4, may be a discal spot in 5 uniting the discal and apical spots in 6-8; spot near end cell against lower edge, conjoined to the spot in 2, but separated by a short black bar from the spot in 3, may be an upper cell spot above it. Uph tawny discal band, but no spot in cell or in 7.

1 (2a). Upf and uph discal band divided by dark veins, markings narrow and dark orange. Upf spot in cell very small, no upper spot in 5. Unh dark ochreous green, discal band obscure.

*concinna*, El and Ed. (30). The Tamil Dartlet. Palnis and Nilgiris, S. India.

2a (1). Upf and uph discal band not divided by dark veins, markings broader and paler.

2 (3). Below dark brown, very sparse ochreous scales on H and costa and apex F: discal band yellow, sharply defined and not edged by black spots.

*paragola*, DeN. (27). The Malay Dartlet. Dawnas to S. Burma, Malayana, Nicobars, Palawan. NR. (= *borneensis*, Mab MS).

3 (2). Below H and costa and apex F orange or orange brown: discal band H and apical area F only defined by black spotting.

a. Unh orange brown, black spotting obsolete. Upf no spot in 5.

I. 89. *Oriens*.—The Dartlets. (Plate 32)—*contd.*

*gola goloides*, M. (27). The Common Dartlet. Ceylon, S. India. NR.

β. Very variable. Unh usually orange with prominent black spotting, but may be as *goloides*. Upf rarely a spot in 5.

\**gola gola*, M. Sikkim to Burma, Siam, Andamans, China, Malaya, Sumatra, Borneo. NR. (*locus*, Pl: *rajagriha* and *trishna*, Fruh, Sumatra and Nias.).

γ. Above markings very much broader and upf always a spot in 5.

*gola akar*, Mab. (28). Java, Borneo, Sumba, Sumbawa, Celebes. (= *naranata*, M, nom nud: *fabriolata*, Plotz, Java: *pseudolus* Mab: *nipata*, Fruh, Bali: *alfurus*, Pl, Celebes).

I. 90. *Padraona*.—The Darts. (Plate 32).

Above marked much the same as in the last two genera. Upf the tawny band with the lower part discal, spot in 1b beyond the middle of 1b and spot in 2 beyond the origin of vein 3 never joining spot end cell.

1a (6a). Unh never with spots in 7.

Fettingi Group.

1b (3a). Above strong purple gloss. Unh no spot in 6.

1 (2). Above markings narrow, white. ♂ upf with a narrow irregular brand mid v1—base v4. Unh greenish brown.

*ilion ilion*, DeN. (32). Sumbawa. Lombok. Alor.

β. Constantly smaller.

*ilion sutrana*, nov. (28). Timor.

2 (1). Above markings narrow, dull orange. Upf no spots in 4, 5: no brand. Unh dark ferruginous.

*purpura*, Evans. (35). Java.

3a (1b). Above no purple gloss.

3 (4a). Upf no spots in 4, 5, markings very narrow, orange. Unh dark ferruginous. ♂ upf with a brand which disappears on applying petrol.

a. ♂ upf brand broad continuous v1-v3. Markings wider and brighter.

*fettingi fettingi*, Mösch. (33). Sumatra. (= *euria* Pl: *pavor*, DeN).

β. ♂ upf brand broken into 2 parts. Wings more pointed.

*fettingi orfitus*, Mab. (35). Java.

4a (3). Upf with spots in 4, 5. Above markings wide, yellow as for *Dara* group generally.

4 (5). ♂ upf continuous brand from v1 to base v4: spots in 1b-5 in a straight line.

a. Above markings bright yellow, brand broad. Upf discal band into 6. Unh greenish ochreous, discal band faint outlined black spots.

*rectifasciata rectifasciata*, El and Ed. (30). The Branded Dart. Karens to S. Burma, Malaya. NR. (probably Sumatra).

β. Above markings darker, brand narrow, irregular. Upf ♂ band not into 6. Unh darker and duller.

I. 90. *Padraona*.—The Darts. (Plate 32)—*contd.*

*rectifasciata cakka*, Fruh. (32). Java.

5 (4). ♂ upf the brand a seam over mid v1. Unh no spot in 6.

a. Upf brand conjoined to the central dark band. Unh dark brown, discal band prominent.

*sapitana sapitana*, Fruh. (26). Lombok, Sumba, Sumbawa.

β. Upf brand detached from the central dark band. Unh greenish brown, discal band not prominent.

*sapitana amor*, nov. (28). Timor. Oinainisa.

6a (1a). Unh normally with 2 spots in 7 (basal may be absent in individuals). In the following series the absence of superficial distinguishing characters renders identification impossible without an examination of the genitalia. All males except *phellus* have a small black brand over the middle of v1 in the central black band, easily seen on applying petrol.

Dara Group.

6b (11a). Tegumen tapering to a sharp or rounded point, never excavate or divided at the end. Upf spots in 4,5 generally more detached from those in 3 and 6.

6c (8a). Of small size, under 30 mm.

6 (7). Tegumen evenly tapering to a long sharp point. Unh no spot in 6 as occurs in other species of the group. Above and unh markings divided by dark veins. Unh greenish brown, band prominent, no black spotting.

a. Above markings reduced, spots in 3, 4 separate. Below darker.

*mæsoides ottala*. Swin. (27). The Lesser Dart. Karens, Burma. NR.

β. Smaller, markings broader, spots in 3, 4 touch.

\* *mæsoides mæsoides*, But. (26). Dawnas to S. Burma. Malaya. C.

γ. Larger. Upf markings narrower. Uph discal band more confluent.

*mæsoides ottalina*, Evans. (29). Andamans. R.

7 (6). Tegumen tapering to a narrow round-ended rectangle. Upf spot in 4 usually overlapping the spot in 3. (Replacing *mæsoides*).

a. Upf spot in 5 detached from 6. Small. Markings broad orange divided by black veins. Unh brownish orange.

*taxilus ganda*, Fruh. (26). Sumatra. Nias. Batoe Is.

β. Larger. Wings more produced.

*taxilus taxilus*, Mab. (28). Java.

γ. Markings broad yellow: upf costal part of central black band narrow or obsolete. Unh brownish.

*taxilus ahastina*, Fruh. (27). Borneo.

δ. Similar. Larger.

*taxilus nikaja*, Fruh. (28). Celebes. Siao. (A very closely allied species occurs in the Moluccas).

8a (6c). Larger, over 30 mm.

8b (10). Uph discal band normally divided by dark veins.

8 (9). Uph normally a prominent spot in 6 and none in 7. Above markings small, pale and narrow. Unh greenish yellow, markings

I. 90. *Padraona*.—The Darts. (Plate 32)—*contd.*

and black spotting rather faint and pale. Tegumen tapering to a bulbous rounded tip.

*dara*, Koll. (30). The Himalayan Dart. Chitral to Kumaon, above 6,000 feet. NR. (= *mæsa*, M: *zebra*, Mab: *nala*, Plotz).

9 (8). Uph normally spot in 6 absent. Tegumen tapering to a narrow flat ended rectangle.

α. Uph discal band prominently divided by dark veins. Unh brownish ochreous. Very variable.

*cato cato*, nov. (32). The Indian Dart. Ceylon. S. India to Central Provinces. C.

β. Uph discal band not divided by dark veins. Unh ochreous, discal band prominently outlined by black spots.

*cato clio*, nov. (32). Kulu to Sikkim, below 6,000 feet. NR.

γ. Uph discal band prominently divided by dark veins. Wings more rounded. Unh greenish brown, discal band prominent, no black spotting.

*cato copia*, nov. (32). Sumatra. Malaya. NR.

10 (8b). Uph discal band normally not divided by dark veins. Tegumen ends in a sharp triangular point.

α. Wings rounded as in females: markings above pale and comparatively broad. Unh rather pale yellow.

*pseudomæsa pseudomæsa*, M. (32). The Common Dart. Ceylon. S. India to Central Provinces. R.

β. Flies in 2 forms. *zatilla* (perhaps WSF) has the wings produced, the markings very narrow: below ochreous to greenish or brownish ochreous, the dark spotting never prominent. *pallida* (perhaps DSF) is very like *pseudomæsa*, the markings very pale and broad.

\**pseudomæsa zatilla*, Plotz. and *pallida*, nov. (36). Sikkim to Karens. C. (*pallida*, R.).

γ. Smaller and much more constant, with narrow markings, spots in 4, 5 detached on upf. Uph the discal band more or less divided by dark veins. Unh greenish brown.

*pseudomæsa ino*, nov. (32). Tavoy to S. Burma. Malaya. C.

δ. Larger: as *zatilla*, wings more produced. Uph divided by dark veins. Unh ochreous brown.

*pseudomæsa yojana*, Fruh. (36). Java. Hainan.

η. Dark form with pale narrow markings. Uph band divided by dark veins. Unh yellow brown.

*pseudomæsa dilutior*, El and Ed. (32). Borneo.

(Note.—The above 3 species have been separated on the genitalia, which are constantly distinct, *dara* occurs alone and is the representative at high elevations, being replaced by *clio* at low elevations. *pseudomæsa* and *cato* would appear to be seasonal forms, as seem to be *zatilla* and *pallida*. *ino* and *copia* fly together in Malaya and appear to be quite distinct internally and externally).

11a (6b). End of tegumen excavate or divided.

11b (19a). End of tegumen not ending in two protruding points.

11 (12a). Tegumen shouldered in the middle, upper part narrowly rectangular, the end concave.

α. Large with broad yellow undivided markings. Unh ochreous with very prominent black spotting.

I. 90. *Padraona*.—The Darts. (Plate 32)—*contd.*

*flava flava*, Murray. (35). The Japanese Dart. Japan. China. (= *japonica*, Mab). NR.

β. Markings more orange. Unh greenish ochreous, black spotting obscure.

*flava alcon*, nov. (35). Karens. R.

γ. Smaller. Markings yellower and narrower. Unh ochreous, with black spotting prominent. Tegumen twice shouldered, end very narrow, ending in a deep cup: may be a different species.

*flava sita*, nov. (30). Sikkim. Maymyo. R.

12a (11). Tegumen not shouldered, upper part broad.

12b (15a). Tegumen shallowly concave at the end; tegumen longer than width at top.

12 (13a). End of tegumen concave between two sharp points.

a. Above broad confluent markings: uph prominent spot in 6. Below ochreous with prominent black spotting.

*confucius confucius*, Fd. (34). The Chinese Dart. China. NR.

β. Above rather narrow confluent yellow markings. Below pale greenish ochreous, spotting not prominent.

*confucius dushta*, Fruh. (32). Assam to Karens. Annam. NR.

13a (12). Edges of tegumen rounded at the end: tip scalloped.

13 (14). Tegumen tapered. Above dark narrow orange confluent markings. Uph no cell spot. Unh dark brownish ochreous, usually no spot in 6. Clasp with tip unusually prolonged.

*juno*, nov. (28). The Burmese Dart. Rangoon to S. Burma. Malaya. R.

14 (13). Tegumen not tapered. Above markings broad and confluent.

a. Small. Unh brownish, spotting faint. End tegumen rounded, scalloping undeveloped.

*tropica satra*, Fruh. (25). The Tropic Dart. Ceylon. C. (= *sunias*, Evans in error).

β. Larger, more orange. Tegumen broader, scalloped.

*tropica diana*, nov. (28). S. India, Palnis, N. Kanara. NR.

γ. Very like *satra*; darker. Tegumen narrow, but distinctly scalloped.

*tropica nina*, nov. (24). Andamans. C.

δ. Yellower. Very variable. Unh ochreous to ochreous brown, often spotted.

*tropica tropica*, Plotz. (28). Sikkim to Burma. Malaya. China. Hainan. Sumatra. Java. Anamba Is. S. Flores.

η. Dark, with narrow dark markings

*tropica angustata*, Matsum. (29). Formosa. (= *pava*, Fruh).

15a (12b). Tegumen deeply excavate.

15b (18). Tegumen as wide as long.

15 (16a). Tegumen deeply scalloped at the end, edges rounded. Large. Markings dark yellow and confluent. Upf spots in 5, 6 separate.

a. Markings broad and straight. Unh dark greenish brown, edge of band suffused.

*palnia palnia*, Evans. (33). The Palni Dart. Palnis, S. India. Sikkim to Ataran. R.



I. 90. *Padraona*.—The Darts. (Plate 32)—*contd.*

β. Above markings very narrow.

*palnia afer*, nov. (34). Sumatra.

16a (15). End tegumen deeply angled, not scalloped, edges sharp.

16 (17). Large. Unh brownish ochreous, veins to termen black. Upf spots in 5, 6 separate. Tegumen flat—topped with a central V.

α. Upf base cell dark. Uph usually no spot in 6, or 7: discal band more or less divided by dark veins.

*serina serina*, Plotz. (34). The Large Dart. Bassein to S. Burma. Andamans. Nias. Java. ? Malaya and Sumatra. R. (= *chariyawa* and *sravanta*, Fruh, Java and Nias).

β. Above markings broader. Uph spots in 6, 7 present.

*serina heterus*, Mab. Philippines.

17 (16). Small. Markings above orange and confluent. Unh brownish, band not divided by dark veins. End tegumen like a broad V.

*trachala*, Mab. (26). The Broad Bident Dart. Assam to Burma. Malaya. C.

18 (15b). Tegumen long and narrow, end deeply slit centrally.

α. Above markings comparatively pale and narrow. Uph no spot in 6. Unh brownish ochreous, usually prominently black spotted.

*nitida ajax*, nov. (27). The Narrow Bident Dart. Karens to Tavoy. NR.

β. Above markings broader and darker: uph with a spot in 6. Unh no black spotting and band divided by dark veins.

*nitida nitida*, Mab. (28). Philippines. (= *flavoguttata*, Plotz).

19a (11b). Tegumen ending in two protruding points.

19 (20). Tegumen shouldered, not tapered. Above markings rather broad, bright yellow: uph with spot in 6. Unh pale ochreous.

*mara*, nov. (28). The Sikkim Dart. Sikkim. R.

20 (19). Tegumen tapered. Above markings narrow, confluent. Unh brownish ochreous. No ♂ brand.

α. Unh usually considerable black spotting.

*phellus phellus*, Mab. (27). The Brandless Dart. Sikkim to S. Burma. Malaya. NR.

β. Unh no black spotting. Markings broader.

*phellus tanya*, Fruh. (28). Java.

(Note.—*philæus*, Mab: type is at Rennes in Coll Oberthur: it has a brand on v2 and is marked "Santa Catarina, Brazil").

I. 91. *Astycus*.—The Palmdarts. (Plate 32).

Upf orange with broad dark brown margin and central black band from v1 to beyond end cell, carrying the brand in the ♂: in ♀ the central band is continued to the base below the cell and the basal half of the cell is dark. Uph dark brown with a broad orange band from 1c to 5, a spot in cell, no spots in 7. Below apex and margin F and all H more or less darkened.



I. 91. *Astycus*.—The Palmdarts. (Plate 32)—*contd.*

1 (2a). ♂ upf brand broad, grey, prominent and appearing to be placed more on the inner than on the outer edge of the central dark band.

a. Upf yellow penetrates through the border above each vein to the margin: yellow areas comparatively narrow, spots in 4, 5 small and detached from spot in 6: usually a black streak in the cell.

*augias augias*, L. (35). The Pale Palmdart. Ceylon. India. Burma. China. Andamans. NR.

β. Upf yellow areas wider, spots in 5, 6 conjoined, no cell streak. *augias colon*, F. (35). Malayana. Philippines. Celebes.

2a (1). ♂ upf brand dark and narrow, appearing to be more against the outer than the inner edge of the dark central band.

2 (3a). The top of the clasp not indented and the sides of the tegumen shouldered in the middle as in *augias*. Much darker orange than *augias*.

a. Clasp with a pronounced shoulder just below the top. Brighter: uph much more prominent orange basal hairs. Border not penetrated by yellow veins.

*pythias lanka*, nov. (35). The Dark Palmdart. Ceylon. S. India. C.

β. Clasp with a much smaller shoulder well below the top. Darker. Uph cell spot round and separate.

\**pythias bambusæ*, M. (35). Central to N India. Burma. China. C.

γ. As last but generally smaller.

*pythias pythias*, Mab. (33). Malayana. (Described from Java: minor races are *upadhana*, Fr, Lombok and *niasana*, Plotz).

δ. Termen F rounded: orange markings broader and tending to extend along the veins. Shoulder on clasp obsolete.

*pythias formosana*, Fruh. (36). Formosa.

η. Deep orange with very broad markings extending along the veins to the termen: central band upf no wider than the brand. Uph discal band nearly meets the cell spot and extends across 6. Shoulder on clasp obsolete. A very distinct race.

*pythias puloa*, nov. (37). Pulo Laut.

ξ. Like *pythias*, darker, upf black streak in cell. Faint shoulder to clasp.

*pythias rasana*, Fruh. (35). Palawan. Philippines.

ε. Broad well defined yellow markings, paler than usual. Clasp with shoulder. Large.

*pythias rahula*, Fruh. (40). Celebes.

3a (2). Top of clasp more or less indented: tegumen tapering, not shouldered. Termen F straight.

3 (4). Upf spots in 4, 5 small, not overlapping spot in 6. Orange markings broad. Unh dark greenish. Clasp much indented.

*grandis grandis*, Mab. (34). Borneo. Java. R. (reappears in the Australian region in a modified form).

4 (3). Upf spots in 4, 5 overlap spot in 6, markings very broad, bright orange. Wings produced, border plain, base darkened. Clasp slightly indented.

*ternatensis sula*, nov. (40). Sula Is. (*ternatensis*, Swin, appears to replace *pythias* in the Moluccas and elsewhere: there is a very definite difference in the genitalia).

I. 92. *Cephrenes*.—The Palm Darts. (Plate 32).

Very similar in appearance to *Astycus*, with broad orange markings, more extensive in the ♀.

1a (3). Unh no defined markings. ♂ ♀ upf black central band always to v1 and veins not yellow on the dark border: uph no cell spot. End tegumen simply rounded.

1 (2). ♂ uph a tuft of hairs from base 6.

a. Upf yellow markings broad. Uph tornal half yellow except for large dark marginal spot in 1c. Base F orange yellow, dusted black scales, discal yellow band complete, part in 1b extending nearly to the base: small spot in 5 and apical in 6-8. Below plain orange yellow shaded brown, except where yellow areas occur above: unf black oval patch along base mv: unh dorsum broad orange.

*prusias insularis*, El and Ed. (42). Pulo Laut. Borneo. (= *kreon*, Fruh, Kina Balu).

β. Darker. Upf usually no spot in 5. Uph dark brown except for broad orange band 1c-5. Unh dark brown except for orange elongate area in 1c and marginal area in 3-5, which may be absent.

*prusias prusias*, Fd. (45). Philippines. (described from S. Philippines: minor races are *matinus*, *padhana*, *sariputra*, Fruh, Luzon, Bazilan and Palawan.

γ. Similar, larger: upf spot in 5 present.

*prusias hercules*, Mab. (50). Celebes. Bangkei. (= *androsthene*s, Fruh, S. Celebes.)

2 (1). ♂ uph no tuft. As *insularis*, but uph a narrow dark marginal band instead of a spot in 1c. Clasp with tooth at the back.

*kuehni*, Plotz (44). Pulo Laut. E. Celebes. (= *simplex*, El and Ed and *subrubra*, Holland).

3 (1a). Unh with a discal band. Upf ♂ black central band not to v1. ♂ no brand or tuft. End tegumen trident. ♂ with broad yellow markings, cell yellow: ♀ cell dark with yellow central spot and narrow bands, may be suffused very dark. Unh yellow to ferruginous, discal band defined by black markings: ♀ glazed greenish brown.

a. Upf central black band broad, running below mv and end cell, considerable seasonal variation.

\*. *palmarum palmarum*, M. (44). The Plain Palmdart. Bengal to Burma, Siam, Malayana. NR. Andamans. VR. (minor races are *kayapu*, Doh, Engano: *raktaja* and *baweana*, Fruh, Java and Bawean).

β. Smaller, paler, with broader wings, narrower black markings and at the apex upf orange running along the veins.

*palmarum nicobarica*, nov. (40). Car and Great Nicobar. C.

γ. As *palmarum* but the black central band very reduced: uph discal band very broad. Above border penetrated by yellow veins.

*palmarum chrysozona*, Plotz. (46). Philippines. Celebes. Negros Is. (described from Luzon: minor races *acalle*, Hopf, Celebes and *negrosiana*, Fruh, Negros Is.).

I. 93. *Ochlodes*.—The Darters. (Plate 32).

Above tawny with dark borders or dark brown with yellow spots F and H. Upf always spots in 1b-3 and 6-8.

1a (6a). Unh without spots or with a continuous discal row of ochreous spots 2-6 or 1c-7 and a more or less prominent spot end cell. Upf spots non-hyaline (except *subhyalina*) and spaces 4, 5 near termen with spots or ochreous.

1B (3a). Unf dorsal area below v3 entirely pale, except below v1 and basal half of space 1b, which is black, and a more or less apparent dark terminal border.

1 (2). Upf tawny discal area not to v7 and no traces of spots uph or unh. Tawny with black veins.

*ochracea*, Brem. (28-32). The Amur Darter. Amur, Corea. (= *rikuchina*, But, Japan, a larger race).

2 (1). Upf tawny area to v7; always at least traces of pale yellow spots upf and uph.

a. Upf tawny with broad dusky border and patch end cell. Unh greenish with the spots pale yellow.

*sylvanus sylvanus*, (28-36). The Palearctic Darter. Europe to N. Asia. C. (There are a number of named European forms; nearly allied races are *anatolica*, Pl, Asia Minor and *hyrcana* Christoph, Persia).

β. Larger. ♂ paler, dusky areas faint; below yellow markings faint. ♀ rather dark brown with the discal spots pale yellow; below dusky over the yellow base, spots prominent.

*sylvanus venata*, Br and Gr. (37-40). Altai and Turkestan to Amur, N. China and Japan. (= *selas* and *amurensis*, Mab, *herculea*, But).

γ. ♂ above borders broad and dark. Above and below veins prominently black.

*sylvanus majuscula*, El and Ed. (43). Shanghai.

3a (1b). Unf dorsum below v3 entirely dark brown, except for the yellow discal spots. Above dark brown with yellow or tawny spots and with ochreous hairs basally: upf double spot end cell and in ♀ a spot in base 2; costa and cell more or less tawny.

3b (5). Upf none of the spots hyaline.

3 (4). Wings produced. Cilia fuscous grey. Below much darker than the next and the spots more prominent.

*similis*, Leech. (38). The Similar Darter. West China.

4 (3). Wings rounded. Cilia pale yellow. Below costa and apex F and all H overlaid greenish ochreous, obscuring the spots, Tegumen with 4 horns as in *sylvanus*.

*sylvanoides*, Leech. (34). The Chinese Darter. West China.

5 (3b). Upf spots above v2 hyaline. Wings rounded and cilia pale yellow. Below costa and apex (to tornus) and all H overlaid dense ochreous scales. Tegumen with 2 horns.

a. Larger.

*subhyalina subhyalina*, Br and Gr. (44-48). The Sub-hyaline Darter. Amur, Corea and Japan.

β. Smaller.

*subhyalina thibetana*, Ob. (36-40). C and West China. Thibet, Assam. R.

I. 93. *Ochlodes*.—The Darters. (Plate 32)—*contd.*

6a (1a). Unh with 3 sharply defined, dark edged, white (yellow in *crataeis*) discal spots in 2, 3 and 6; sometimes traces of a spot end cell. Above dark brown, basally clothed ochreous hairs; prominent hyaline yellow spots F and H, and sometimes traces of spots uph in 4 and 5; upf no spots in 4 and 5 (rarely a dot in 4), spots in 2, 3, end cell and apical 6-8, also non-hyaline spot in 1b. Unf dorsal area below v3 dark brown, except for the discal spots. Below cell, costa and apex to tornus F and all H overlaid dark ochreous scales. Cilia yellow grey. Tegumen with 2 front and 2 back horns.

6b (8a). ♂ upf brand uniform black.

6 (7). Wings rounded. Top of clasp convex or flat.

*bouddha*, Mab. (32-35). The Buddhist Darter. West China and S. E. Thibet. (♀ var *consors*, Leech, with white spots upf).

7 (6). Wings produced. Top of clasp concave and produced.

a. Comparatively small.

\* *siva siva*, M. (33-37). The Assam Darter. Assam to S. Shan States. NR.

β. Larger. Above spots larger.

*siva karenia*, nov. (39-42). Karens. NR.

8a (6b). ♂ upf brand with a central whitish line, interrupted at vl.

8 (9). Unh veins concolorous with the ground. Upper apex of clasp produced.

a. Comparatively large. Uph spots large, yellowish, suffused. Unh spots rather obscure, yellowish.

*brahma brahma*, M. (36-38). The Himalayan Darter. Mussoorie to Kumaon. NR.

β. Smaller. Uph and unh spots smaller, clearly defined and white.

*brahma rama*, nov. (30-34). Sikkim, Chin Hills. NR.

9 (8). Unh veins black. Upper apex of clasp not produced.

*crataeis*, Leech. (43-46). W. China.

I. 94. *Pamphila*.—The Chequered Darter. (Plate 32).

Above tawny with dark borders. Unf paler; apex F and all H overlaid ochreous to green. Unf 3 apical spots in 6-8 and 2 discal in 4 and 5 near margin; unh curved discal row 1c-7, spot in cell and on either side of it at bases 1c and 7; spots white. These spots appear above as tawny spots, usually prominent on F and obscure or invisible on H.

a. Above dusky borders broad. Unh greenish to reddish grey.

*comma comma*, L. (30-35). Europe to Amur. (There are many named European forms).

β. Above border very narrow and sharply defined. Unh greenish, spots white and glossy.

*comma mixta*, Alph. Tian Shan, Ferghana and Turkestan.

γ. Above border broad dusky, elsewhere dark tawny. Unh dark green, discal spots dark bordered, conjoined or nearly so.

I. 94. *Pamphila*.—The Chequered Darter. (Plate 32)—*contd.*

\* *comma indicofusca*, Ver. Chitral to Kumaon. NR. (*lato*, GG, from the Dschakar Mts., Thibet and ? West China is probably a good race).

δ. Paler.

*comma dimila*, M. Bashahr—Kumaon. R.

η. Above very dark and dusky border very broad, leaving only spots on H. Unh ochreous, spots obscure, whitish, reduced, usually only spot in cell and discal row 2-6.

*comma florinda*, But. Japan and Amur. (= *repugnans*, Stg and *micado*, Mab).

I. 95. *Adopæa*.—The Midgets.

Above red to golden ochreous with dark borders and in some species dark bases, areas end cell and veins. No species has as yet been recorded from Indian limits.

1a (6a). Veins nowhere conspicuously black.

1b (5). ♂ with a brand upf.

1c (3a). ♂ brand continuous from v1 to base 3 and not reaching mv till mid 2 and 3. Above border narrow, well defined.

1 (2). Above more or less overlaid dark ochreous; ♀ with pale yellow spot end cell and a discal row 3-8, which may appear more or less in the ♂. Below golden yellow; dorsum F dark brown. Costa =  $1\frac{1}{4}$  dorsum.

*actæon*, Rott. (27). The Dark Midget. Prussia to South Europe, North Africa and Syria. (There are several named forms, that from Syria being *phœnix*, Graves).

2 (1). Above reddish yellow, unmarked. Below apex F and all H except dorsum greenish ochreous, rest reddish yellow.

*thaumas*, Hufn. (28). The Common Midget. Europe and Asia Minor (several named forms, the Syrian being *syriaca*, Tutt).

3a (1c). ♂ upf brand broken at v2, upper part lying against mv throughout.

3 (4). ♂ brand long, lower part crosses space 1b; upper part to under v3. As *thaumas*, but border above broader and more diffused.

*hyrax*, Led. (27). The Dusky Midget. Asia Minor to Turkestan.

4 (3). ♂ upf brand thin and short, lower part consists of a spot under v2 and upper not to origin of v3. Above pale golden yellow, border very narrow, and sharply defined.

*lineola*, Ochs. (27). The Golden Midget. Europe to Turkestan and Algeria. (There are several named European forms).

5 (1b). ♂ no brand. Above border broad, sharply defined, bases dark. Below uniform pale ochreous; unf dorsal dark area to  $\frac{2}{3}$  along v2.

*stigma*, Stg. (28). The Turkestan Midget. Turkestan.

6a (1a). Veins conspicuously black. Tawny above and below.

6 (7a). ♂ upf brand as *thaumas*, ♂ above border narrow, ♀ border broad, bases dark and a dark patch at end cell F; unf tornal dark patch not to dorsum.



I. 95. *Adopæa*.—The Midgets—contd.

*leonina*, But. (30). The Tawny Midget. Japan, Corea, Amur. West China. (The West China form is smaller and probably deserves a racial name).

7a (6). ♂ no brand.

7 (8). F no black streak in cell and unf dark tornal patch not to dorsum.

α. Above borders broad, basal area H dark; dorsum F dark throughout.

*nervulata nervulata*, Mab. (30). The Veined Midget. West China.

β. Above borders narrow and generally less dark.

*nervulata astigmata*, Leech. C. China.

8 (7). F a black streak in cell and unf dark tornal area to dorsum. Above borders very broad and bases dark also a dark area at end cell F: dorsum not continuously dark but divided by a pale area in the middle; in ♀ cell is dark.

α. Paler.

*sylvatica sylvatica*, Brem. (30). The Chinese Midget. Japan, Amur and Corea.

β. ♂ darker. ♀ nearly black.

*sylvatica occidentalis*, Leech. West China.

γ. Above with purple reflexions. Below veins broader black.

*sylvatica tenebrosa*, Leech. C. China.

I. 96. *Iton*.—The Wights. (Plate 32).

1a (3). Unh cell all white. Above dark brown; upf with white hyaline discal spots in 2, 3 and 4 (and sometimes 5) and apical 6-8, often non-hyaline spot in 1b, which does not show unf. Below dark brown, costa and apex F and dark areas H overlaid ochreous scales; unf mid termen whitish. Unh dark brown costa above cell and v7, dark brown central area below cell and dark margin, remainder white.

1 (2). Uph broad white tornal area extending to half-way up dorsum and to v4; dark marginal area usually tapers to v1b but may end there broadly. Unh central dark area absent or at most small in 2, and 3; marginal band in spots separated by white veins. ♂ unf a dense tuft of upturned black hairs from near base dorsum.

α. Upf spot in 1b, spots large. Uph dark border to v1b broad and scarcely diminishing. Unf white subtornal area. Unh dark marginal spots large.

*semamora semamora*, M. (42-46). The Common Wight. Sikkim to Assam. NR.

β. Upf no spot in 1b (rarely in ♀), spots smaller. Uph dark border usually to v1b, but tapers out. Unf no white subtornal area. Unh marginal spots small.

\* *semamora barea*, Hew. Assam to Burma, Siam, Malaya, Sumatra. NR. (from Sumatra=*adamsoni*, Swin, N Burma).

γ. Larger, darker: spots F smaller. Uph dark border tapers from v3 to v2. Unh marginal spots much smaller.



I. 96. Iton.—The Wights. (Plate 32)—*contd.*

*semamora barina*, nov. (47-50). Borneo. ? Philippines.

2 (1). Uph tornal white area absent or obscure, more developed in ♀ and divided by black veins. Unh the central dark area large in 1c-3; marginal band not broken into spots and much broader. ♂ unf no tuft.

*watsonii*, DeN. (44-48). Watson's Wight. Chin Hills to Dawnas. West Siam. Perak (Adams' coll). NR.

3 (1a). Unh no white in cell and not overlaid ochreous scales. Upf spots in 2, 3, 6-8. ♂ unf no tuft.

*azona*, Hew. (56). Celebes.

## I. 97. Baoris.—The Swifts. (Plate 32).

Above dark brown, bases may be clothed ochreous hairs; upf with separate white or pale yellow hyaline spots, to a maximum of 2 in cell, 1 or 2 (non-hyaline) in 1b, in 2, 3, 4 and apical 6-8. Uph unmarked or the spots unh may appear. Below dark brown, costa and apex F and all H usually overlaid greenish or ochreous scales; unf often a pale diffused discal patch in 1b. Unh may have up to a maximum of a pale spot in cell against mv and a discal row 1c-6.

1a (32a). Antennæ at least =  $\frac{1}{2}$  wing, reaching to about end v12 and to spots at end cell.

1b (17a). Uph never spotted. Unh normally unspotted, but may be spots in 2 and 3.

Oceia Group.

1c (12a). Upf normally with spots in the cell.

1d (3a). ♂ with secondary sexual characters.

1 (2). ♂ uph a prominent tuft of paintbrush-like recumbent hairs, dark brown, springing from below costal vein between origin of vs 7 and 8 and overlying loose grey modified scales occupying the whole cell; unf a polished dorsal area below v2, containing a yellow brown oval brand on either side of the middle of v1; dorsum F bowed. Upf normally with hyaline white spots, 2 in cell, discal in 2, 3, 4 decreasing, apical 6, 7, 8: in ♀ also 1 or 2 non-hyaline spots in 1b, reproduced as a diffused yellowish white patch unf. Below chocolate to slatey brown.

a. ♂ upf lacks spots in cell and 4, also usually the apical ones.

*oceia penicillata*, M. (45). The Paintbrush Swift. Ceylon. NR.

β. Normally fully spotted. Below slatey brown.

\* *oceia farri*, M. S. India to Sikkim to N. Burma. NR.

Var. *sikkima*, Swin. No cell spots.

Var. *unicolor*, M. Spotless.

γ. Unf costa and apex and all unh more or less overlaid greenish ochreous scales and in ♀ often a discal white spot in 2.

*oceia nirwana*, Plotz. Karens to S. Burma, Siam, S. China, Malaya, Sumatra, Nias, Java. C.

δ. ♂ upf cell spots absent, also spots in 4 and 8.

*oceia scopulifera*, M. Andamans. NR.

η. Like *nirwana*, but smaller. Inner upper edge of clasp pointed.

## I. 97. Baoris.—The Swifts. (Plate 32)—contd.

*oceia simillima*, El and Ed. (44). Borneo, Pulo Laut.

ξ. Very like *nirwana*, inner upper edge of clasp vertical, sharply pointed.

*oceia oceia*, Hew. Philippines. (= *neophytes*, Mab).

ε. ♂ upf much paler, fully spotted. Below densely overlaid ochreous green scales. Small.

*oceia leechi*, El and Ed. (42). C and W China.

2 (1). ♂ upf narrow grey band mid vl to lower inner edge of spot in 2. Fully spotted. Below chocolate more or less overlaid ochreous brown scales.

*brunnea*, Snell. (44). The Dark Branded Swift. Sikkim to Burma. S. Annam, Java, Bali, Borneo. NR. (from Java = *cære*, DeN, Burma and *sodalis*, Mab, Borneo).

3a (1d). ♂ no secondary sexual characters.

3 (4a). Upf cell spots conjoined: always spot in 1b (often 2 in ♀): spots pale yellow. Cilia pale yellow. Below plain dark slate-brown.

*pagana*, DeN. (50). The Figure of 8 Swift. Sikkim to Dawnas. NR.

4a (3). Upf cell spots separate.

4b (11). Unh uniform.

4c (10). End of outer lobe of clasp rounded, not produced.

4d (6a). Cilia entirely yellow.

4 (5). Upf upper cell spot and apical spots absent, faint spot in 1b: unf diffuse elongate pale area in 1b. Below golden chocolate, no overlying scales. Wings produced.

*aurociliata*, El and Ed. (45). The Yellow-fringed Swift. Sikkim to Manipur. R.

5 (4). Upf spots complete, small, no spot in 1b: unf dorsal area all blackish, no pale area in 1b. Below overlaid dark ochreous scales.

*chimdroa*, Evans. (40). The Abor Swift. Abor, Chimdro Valley. R.

6a (4d). Cilia never entirely yellow.

6b (8a). Lobes of clasp of equal height.

6 (7). End of tegumen without detached points. Cilia F and H pale ochreous, apically ashy. Unh dark golden brown, no overlying scales: unf dorsal area black.

a. Small. Upf spots complete, only trace of spot in 1b: unf pale diffuse spot in 1b.

*sirius sirina*, nov. (43). The Sirius Swift. Manipur. R.

β. Large. Upf prominent spot in 1b: unf prominent sharply defined double spot in 1b.

\* *sirius sirius*, Evans. (48). Karens to Dawnas. NR.

γ. Upf spots reduced, upper cell spot may be absent, no spot in 1b: unf small diffuse spot in 1b.

*sirius fusca*, nov. (42). Malaya, Borneo.

7 (6). End tegumen with two detached points. Unh overlaid other scales.

a. A rather large variable form: yellowish white cilia. Normally upf spots complete, no spot in 1b: unf obscure spot in 1b. The spots may be reduced, the upper cell spot, spot in 4 and unf in 1b may be absent. Unh overlaid ochreous brown scales.

1. 97. Baoris.—The Swifts. (Plate 32)—*contd.*

*cahira bromus*, Leech. (44). The Colon Swift. W China.  
 β. Smaller, darker, wings more pointed. Upf spots reduced, cell spots obscure, no spot in 1b. Unh overlaid dark ochreous brown scales. Cilia ochreous near tornus H, ashy elsewhere.

*cahira cara*, nov. (41). Manipur, Assam. R.

γ. Similar to *bromus*, smaller. Upf spots prominent, no spot in 1b: unf diffused spot in 1b. Unh clothed lighter brown ochreous scales. Cilia whitish.

*cahira carna*, Evans. (40). Rangoon, Dawnas. NR.

δ. Smaller and paler above. Upf spots very small, but complete, no spot in 1b; cilia ashy turning grey at tornus. Unf small diffuse spot in 1b. Unh clothed ochreous green scales.

*cahira tenuis*, nov. (37). Ataran, Tavoy. NR.

η. Dark form like *cara*, cell spots prominent, no spot in 1b or 4. Cilia ashy turning yellow at tornus H. Unf no spot in 1b. Unh ochreous brown scales.

*cahira cahira*, M. (41). Andamans. R.

8a (6b). Lobes of clasp unequal, inner higher.

8 (9). End tegumen with 2 detached points. Very like *sirina* and *cara*. Upf spots complete, but no spot in 1b. Below overlaid ochreous brown scales except for lower part F, which is basally black and outwardly brown, no pale area in 1b.

*confusa*, nov. (41). The Confusing Swift. Ataran, Tavoy. R.

9 (8). End tegumen without detached points, being connected to the inner arch.

α. Upf spots complete and usually a spot in 1b: unf well marked spot in 1b. Cilia whitish. Unh clothed ochreous brown scales, sometimes a spot in 2.

*austeni austeni*, M. (42). The Austen Swift. Sikkim to Manipur. Bassein. Tavoy. Hong Kong. NR. (ab *onchisa*, Swin, pale fascia unf).

β. Smaller, upf spots reduced, no spot in 4 or 1b: unf diffused spot in 1b. Unh clothed ochreous green scales.

*austeni reducta*, nov. (40). Borneo. Sumba.

10 (4c). Outer lobe of clasp produced.

α. Upf no upper cell spot, no spot in 1b (2 in ♀). Unf very diffuse white area in 1b, obscure in ♂, prominent in ♀. Cilia grey to ashy. Unh very closely overlaid dark ochreous brown scales.

*cormasa moolata*, M. (42). The Full Stop Swift. Sikkim to Burma. R. (= *dravida*, Mab).

β. Smaller. Upf usually with 2 cell spots.

*cormasa cormasa*, Hew. (40). Malayana. Philippines. (= *connassa*, in error: *jelavana*, Fruh, Bazilan).

11 (4b). Unh overlaid ochreous green scales: DSF (*yatesi*) with a broad greenish white discal band and 2 obscure small white spots in 2, 3: WSF (*canaraica*) white band absent or obscure, spots very prominent. Upf spots complete, ♂ no spot in 1b: unf prominent spot in 1b in WSF, obscure in DSF. Cilia grey to ashy.

*canaraica*, M. (41). The Kanara Swift. N. Kanara, Coorg, S. India. R. DSF *yatesi*, Evans.

12a (1c). Upf normally no spots in cell (present in some races of *philippina*).

I. 97. Baoris.—The Swifts. (Plate 32)—*contd.*

12 (13a). ♂ unf a tuft of upturned brown hairs one-third along dorsum. Upf ♂ small discal spots 2, 3, 4 and apical 6, 7: in ♀ spots usually large and also 2 spots in 1b and dot in 8. Unf very prominent discal pale area in 1b. Unh dark chocolate; in ♀ overlaid dark ochreous brown scales and with sometimes small white spots in 2 or 2 and 3. Cilia ashy.

*plebia*, DeN. (40). The Tufted Swift. Sikkim to Burma. Java. Borneo. Pulo Laut. (= *mormo*, Mab, Java).

13a (12). ♂ no tuft unf.

13b (15a). Unh not overlaid ochreous green scales.

13 (14). Unh chocolate with large diffused pale purple central area.

a. Upf and unf no spot in 1b: discal in 2, 3, 4, apical 6, 7. Cilia ochreous brown to ashy.

*tulsi tulsi*, DeN. (45). The Purple Swift. Sikkim to Karens. NR.

β. ♂ upf spot in 4 absent. Unh purple area more extensive and better defined.

*tulsi jolanda*, Plotz. Java.

14 (13). Unh no pale area, overlaid dark ochreous brown scales. ♂ upf no spot in 1b.

a. ♂ unf traces of spot in 1b: in ♀ prominent unf and upf. Cilia ochreous. Unh no white spots.

*kumara lanka*, Evans. (44). The Blank Swift. Ceylon. NR.

β. ♂ unf prominent diffused double spot in 1b, of which there may be traces upf. ♀ unh usually a spot in 2 and sometimes also in 3.

*kumara kumara*, M. (42). S. India to N. Kanara. NR.

γ. Similar but darker. Cilia greyish.

*kumara moorei*, Evans. (44). Sikkim to Dawnas. NR.

δ. Smaller, darker, spots much yellower. Unh lighter. Unf spot in 1b obscure.

*kumara malaya*, Evans. (37). Mergui, S. Burma. Malaya. Sumatra. Formosa.

η. Similar, but larger.

*kumara javana*, nov. (42). Java.

ξ. Wings produced: cilia bright yellow at tornus H. Upf only small discal spots in 2, 3, 6. Below chocolate, not overlaid ochreous scales. Unf no spot in 1b.

*kumara elongata*, nov. (45). Borneo.

15a (13b). Unh overlaid ochreous green scales.

15 (16). Upf always a prominent round spot in 1b, double on unf.

a. Large and dark. Unh scaling sparse. ♂ upf usually a second spot in 1b. Ternal cilia F and H ochreous, elsewhere ashy.

*philippina seriata*, M. (44). The Philippine Swift. Ceylon. NR.

β. Smaller and paler. Unh scaling usually dense. ♂ upf single large spot in 1b. Cilia greyish, yellow tornally.

\**philippina belli*, nov. (43). S. India to N. Kanara. Sikkim. Singapore. Sumatra. Borneo. (type N. Kanara). NR.

γ. Upf upper spot present in 1b. Cilia H greyish yellow throughout.

I. 97. Baoris.—The Swifts. (Plate 32)—*contd.*

*philippina philippina*, HS. (44). Philippines.

♂. Upf usually with 2 cell spots and no upper spot in 1b.

*philippina meharagga*, Fruh. (44). Celebes.

16 (15). Larger. Upf no spot in 1b, obscure lower cell spot, discal in 2, 3, 4, apical dot in 6. Unh sparse scaling. Unf suffused spot in 1b. Genitalia as *philippina*, but appearance very different.

*beraka*, Plotz. (50). Celebes. (= *robusta*, El and Ed, Sangir).

17a (1b). Upf usually spotted: unh usually at least 3 spots, but in some forms may be absent.

17b (23a). Tegumen undivided.

Eltola Group.

17 (18a). Upf no spot in 1b nor upper cell spot, spots in 2 to 4, 6 to 8. Above black. Below dark brown overlaid ochreous green scales: unh discal row of small white spots in 2 to 6, spot in 5 shifted out, some spots may be absent.

*minuta*, Evans. (28). The Baby Swift. Karens to S. Burma. Malaya. VR.

18a (17). Upf always a spot in 1b. Uph with prominent spots. Below overlaid ochreous scales.

18b (20a). Upf cell spots separate. Uph white discal spots in 2, 3, 4, 5, latter shifted out.

18 (19). Upf cell spots equal, inner edges in line with inner edge of spot in 2.

*pellucida*, Murray. (40). Japan. Amur. Corea. (= var *quinquepuncta*, Mab: and ? *sachaliensis*, Matsum, Saghalien).

19 (18). Upf lower cell spot produced towards base, spot in 2 with its inner edge opposite the outer edge of the lower cell spot. Wings produced.

*zina*, nov. (44). W and C China.

20a (18b). Upf cell spots conjoined.

20 (21a). Uph and unh spots in 4, 5 contiguous, but not conjoined to a single spot. Above bases clothed ochreous hairs, spots yellow. Upf may be an upper dot in 1b and a dot in 5. Uph spotting very variable, may be quite plain or up to a full series of spots in 2 to 6. Unh may be a spot in the cell.

\**contigua*, Mab. (36-42). The Contiguous Swift. S India. Kumaon to Burma. W China to Hongkong. Formosa. Siam. Tonkin. Malayana. Celebes. Flores. C. (= *toona*, M, Bengal: *scorteia*, Mab, Java: ? *kuyaniana*, Matsum, Formosa).

21a (20). Uph and unh single large spot in 4-5, smaller in 2 and 3.

21 (22). Above bases clothed ochreous hairs. Cilia ochreous. Spots pale yellow in ♂, white in ♀. Tegumen with two pairs of horns.

\**eltola*, Hew. (35-45). The Yellow Spot Swift. Murree to Assam. NR. (= ? *tappana*, Matsum, Formosa).

22 (21). Above bases clothed greenish hairs. Tegumen hornless.

α. Rather large. Upf spots white. Cilia whitish.

*discreta himalaya*, Evans. (36-42). The Himalayan Swift. Murree to Kumaon. NR.

β. Smaller.



I. 97. *Baoris*.—The Swifts. (Plate 32)—*contd.*

*discreta discreta*, El and Ed. (34-37). Sikkim to Karens. NR.

γ. Large, wings more elongate. Upf spots pale yellow.

*discreta felicia*, nov. (43). Wa-ssu-kow, W. China.

δ. Uph only 2 spots.

*discreta taiwana*, Matsum. Formosa (not seen by me).

23a (17b). Tegumen divided into 2 connivent lobes.

Mathias Group.

23b (25a). ♂ upf prominent spot in 1b, discal 2-4, apical 6-8, 2 cell spots. Unh overlaid dark ochreous scales; up to a maximum of spots in 2-6 and cell.

23 (24). Upf spots white, cell spots contiguous. Uph elongate spot in 4.

\**assamensis*, WM and DeN. (50-60). The Great Swift. Central Provinces. Ganjam. Mussoorie to Burma. Malaya. (= *alice*, Plotz).

24 (23). Upf spots pale yellow, cell spots separate. Uph plain or up to 3 small dots.

α. Dark. Unh scaling sparse, strong purple sheen: spots complete and prominent.

\**conjuncta narooa*, M. (45-52). The Conjoined Swift. Ceylon. S. India. NR.

β. Paler. Unh scaling denser, no purple sheen: spots more or less complete.

*conjuncta javana*, Mab. Dun to Burma. Andamans. Nicobars. China. Annam. Malayana. Sumbawa. Lombok. Banka. Timor. NR.

γ. Unh scaling very dense, spots hardly visible. Above denser clothing of greenish hairs.

*conjuncta conjuncta*, HS. Philippines.

25a (23b). ♂ upf no spot in 1b.

25b (28a). F v2 well before v11. Wings broad.

25c (27). ♂ upf brand from mid v1 to the spot in 2.

25 (26). Above pale brown. Upf spots small, white, 2 cell spots. Uph straight row of small white dots in 2-5. Unh overlaid greenish ochreous scales. Brand prominent, whitish.

*menzia*, M. (42). China (Shanghai. Nankow. Ningpo. Kiu-kiang).

26 (25). Above dark brown. Upf single upper cell spot. Uph row of white dots 2-5 present or absent. Below much darker, overlaid dark ochreous scales. Brand obscure, broken and incomplete. Palpi semi-erect.

*nascens*, Leech. (44). W. China.

27 (25c). ♂ upf no brand. Above as *nascens*, but uph plain. Unh overlaid dark ochreous scales, discal row of large shining purple spots in 1c-6 and dot in cell. Palpi semi-erect.

*coerulescens*, Mab. (44). Mupin, W. China.

28a (25b). F v2 opposite or just before v11, wings produced.

28 (29a). ♂ upf no brand. Rather pale brown, no spot in 1b, rest complete. Uph plain. Unh overlaid ochreous green scales, prominent white spots in 2-6 and cell.

*jansonis*, But. (40). Japan. Corea.

29a (28). ♂ with brand from mid v1 to spot in 2.



I. 97. Baoris.—The Swifts. (Plate 32)—*contd.*

29 (30a). Unh overlaid ochreous scales, spotless. Above brown, clothed ochreous hairs. Upf spots small, pale yellow, complete.

*flava*, Evans. (40). The Yellow Branded Swift. Tavoy. Penang. VR.

30a (29). Unh overlaid greenish ochreous or greyish scales.

30 (31). Tegumen not tapering. Unh prominent spots in 2-6 and cell, but some may be absent and some show uph.

a. Tegumen tips parallel or divergent. Unh some spots usually absent and rarely showing uph.

*sinensis subochracea*, M. (38). The Large Branded Swift. Ceylon. S. India to Bengal.

β. Tegumen tips connivent. Unh spots usually complete and some showing uph.

\**sinensis sinensis*, Mab. (42). Kangra to S. Shan States. Shanghai. W. and C. China. (= *prominens*, M and *similis* Leech; ? *girana*, Matsum, Formosa).

31 (30). Tegumen tapering. Unh spots very small, varying from none to the full series of 1b to 7 and cell. Uph usually plain, but may be spots in 3, 4, 6.

a. Above pale brown, spots small. Unh overlaid greyish scales.

*mathias thrax*, Hüb. (32-38). The Small Branded Swift. Aden. Egypt. Palestine. Syria to Cutch and S. Punjab. C. (= *midea*, Walker, Karachi).

β. Dark brown, spotting very variable. WSF paler with large spots. DSF in India (*agna*) larger, darker, with all spots reduced.

*mathias mathias*, F. (32-38). Ceylon. India. Burma. Andamans. China. Japan. Formosa. Malayana. Philippines. Celebes. C. DSF *agna*, M. India. (= *chaya*, M, Sikkim: *monilis*, Mab, Sikkim: ab *flexilis*, Swin, Poona: *juliana*, Lat, Java: *ella* and *consanguis*, Plotz, Java: *niasica*, Fruh, Nias: *balarama*, Plotz, Philippines: ? *cretura*, Plotz, Celebes).

32a (1a). Antennæ very short, not equal to half costa.

Guttatus Group.

32b (34). Upf spots in 2, 3, 4 equidistant and never a spot in 5.

32 (33). Upf normally no spots in the cell or in 1b. Unh normally at least spots in 4, 5.

a. Comparatively large, high elevation form. Upf decreasing spots in 2-4, apical 6-8, very rarely 2 faint spots in cell. Uph and unh a straight decreasing row of spots in 2-5.

\**guttatus guttatus*, Brem. (38). The Straight Swift. Chitral to Assam. China. Japan. C. (from N. China = *fortunei*, Fd, Shanghai: *mangala*, M, Bengal).

β. Smaller, very variable. Uph and unh spots may be as in *guttatus*, or highly irregular, may be a spot in 5 and in cell as well: spots may be small, some absent, or large and coalesced.

*guttatus bada*, M. (32-36). Ceylon. India. Burma. China. Malayana. Philippines. Celebes. Lombok. C. (from Ceylon = *philino*, Mösch, Himalaya: *dædeli*, *intermedia*, *haga* and *sifa*, Plotz, Java: *nondoa*, Plotz, Manila: *wambo*, Plotz, India: *quinigera* and *hainana*, M, Hainan: *ormuzd*, GG, Kabadian: ab

1. 97. *Baoris*.—The Swifts. (Plate 32)—*contd.*

*philotas*, DeN, Sikkim: an aberration from Macao, Hongkong has uph a white dot in 3 and unh black spots in cell and 2-5).

γ. Much darker. Uph spots very large and coalesced.

*guttatus apostata*, Snell. (34). Sumatra. Java. NR. ? hill form.

A variety from Sumatra and Lombok is purple washed below with large obscure purple white spots: uph plain: upf spots small.

33 (32). Upf normally a prominent spot in 1b, decreasing series 2-4, irregular apical 6-8, 2 cell spots. Uph plain or there may be 1 to 3 small dots. Unh usually small spots in 2, 3 and 6, rarely a spot in cell and in 4.

a. Generally paler and without cell spots.

*selleri selleri*, Led. (30-36). The Rice Swift. S. Spain. N. Africa. Crete. Cyprus. Syria. Palestine. C. (= *holli*, Ob, Algeria).

β. Generally darker and usually 2 cell spots.

\**selleri cinnara*, Wallace. Ceylon. India. Burma. Andamans. Nicobars. China. Malayana. Philippines. Celebes. Flores. C. (from Formosa = *colaca*, M, Andamans: *cingala*, M, Ceylon: *saturata*, WM and DeN, Nicobars: *kolantus*, Plotz, India: *ab distinctus*, Holland, Hainan, with brown spots unh: *saruna*, Plotz, Java).

γ. Above with very large spots.

*selleri ogasawarensis*, Matsum. Bonin Is.

34 (32b). Upf spot in 2 nearer to spot in 3 than to spot in 4, often a spot in 5, only an upper spot in cell, which may be absent. Unh small white spots in 2-6, but 4, 5 may be absent; some may appear uph. Palpi third joint more slender than usual.

a. Upf no spot in 1b.

*bevani thyone*, Leech. (35). Bevan's Swift. C. and W. China. Formosa. NR.

β. Upf ♀ with a spot in 1b and usually present in ♂.

\**bevani bevanii*, M. (34). S. India. Central Provinces. Murree to Burma. Malayana. Philippines. Celebes. Flores. C. (= *vaika*, Plotz).

(Note.—I cannot place "*Parnara*" *yanuca*, Fruh, Formosa, described as unmarked coffee brown, cilia yellowish grey, median part unf black, expanse 42 mm).

1. 98. *Gegenes*.—The Dingy Swift. (Plate 32).

Above very dark to very pale brown in desert areas. ♂ normally unmarked above, but in pale specimens the spots from below may show through; in ♀ upf the spots from below always show through. Cilia dusky grey. Below costa and apex F and all H clothed grey scales. Unf in ♀ complete row of discal whitish spots, 2 in 1b (upper small and against outer edge of lower spot), in 2 and 3, small in 4 and 5, apical 6-8; in ♂ the spots are reduced and the spot in 1b is rarely traceable. Unh a discal row of obscure small grey white discal spots in 1c-5 and a spot in 6 further from termen.

1 (2). Larger.

a. Darker.

I. 98. *Gegenes*.—The Dingy Swift. (Plate 32)—*contd.*

*nostrodamus nostrodamus*, F. (28-35). S. Europe. N. Africa. Asia Minor to Central Asia. (= *pygmæus* in error: *pumilio*, Hoff).  
 β. Paler.

\**nostrodamus karsana*, M. Baluchistan. N.W.F. Province. Sind. W. Punjab. Afghanistan. E. Persia. NR. (= *indica*, Mab, India).  
 2 (1). Smaller.

*lefebvrei*, Ramb. (27). S. Europe, Asia Minor, Mesopotamia. (generally accepted as a distinct species).

I. 99. *Eogenes*.—The Torpedo. (Plate 32).

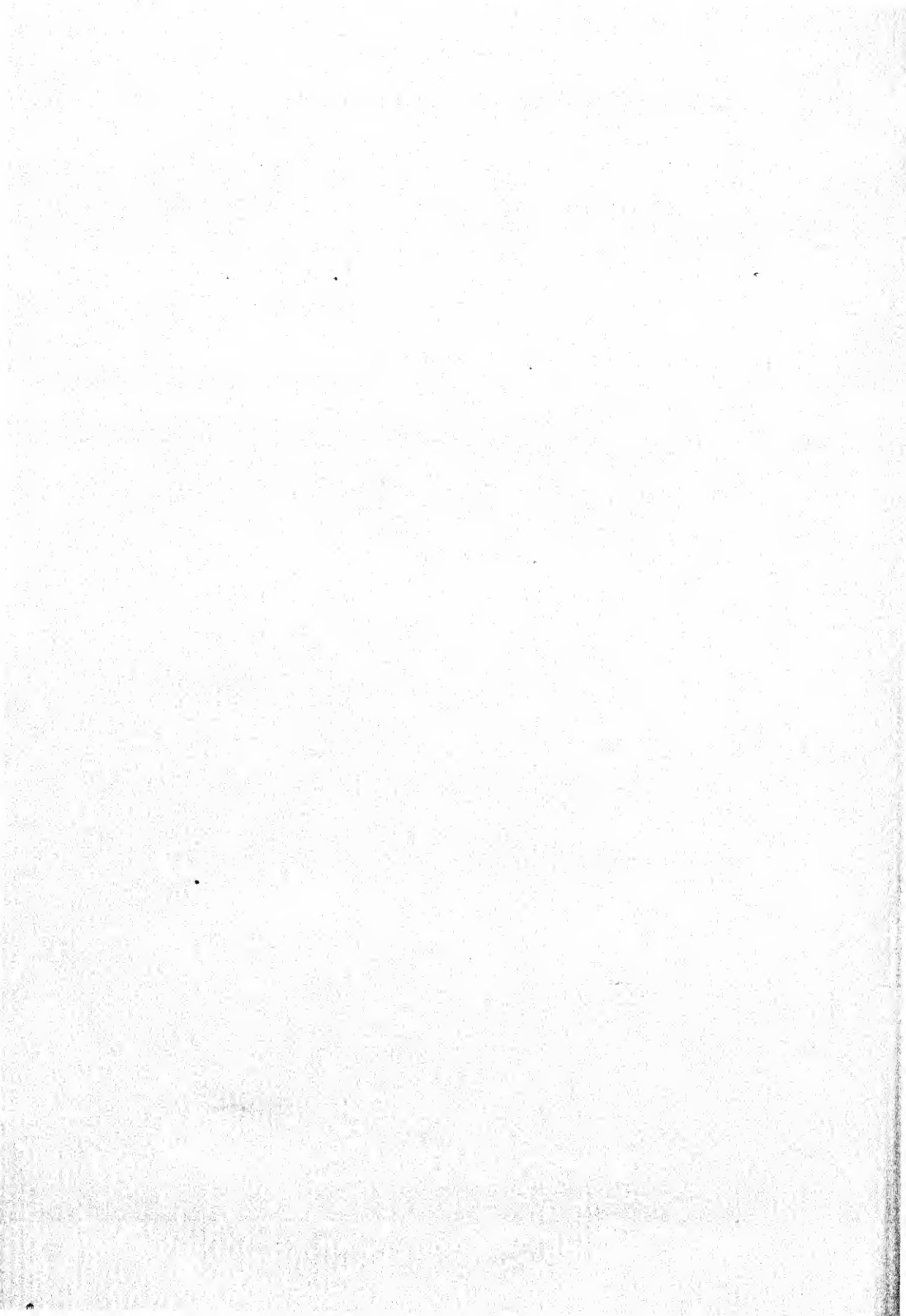
Above brown, cilia grey; semi-hyaline spots on F only, double spot in cell, discal row pointing to apex, consisting of double spot in 1b, in 2 and 3 (coalesced in ♀), small dots in 4 and 5 (often absent), conjoined apical spots in 6-8. Below brown, apex F and all H overlaid grey scales leaving on H obscure pale centred dark spots in 2, 3 and 5, which may appear as dots uph.

α. Spotting complete usually.

\* *alcides alcides*, HS. (38-44). Asia Minor to Baluchistan, Chitral. NR.

β. Spots in cell and 3-5 tend to be obsolete: uph and unh spotless.

*alcides uhrmani*, Christoph. (36-40). C. Asia, Tekke, Bokhara, Karategin.



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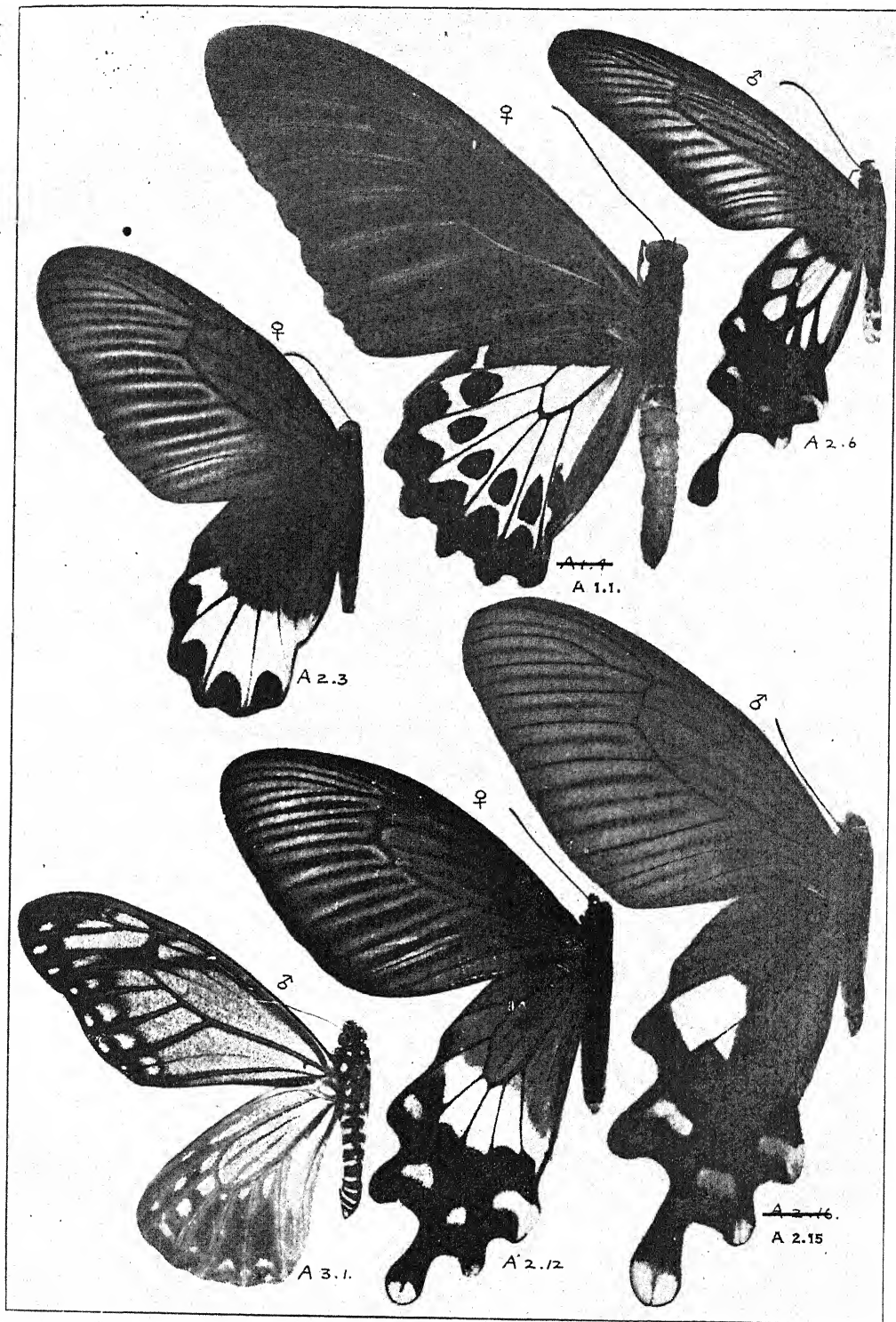
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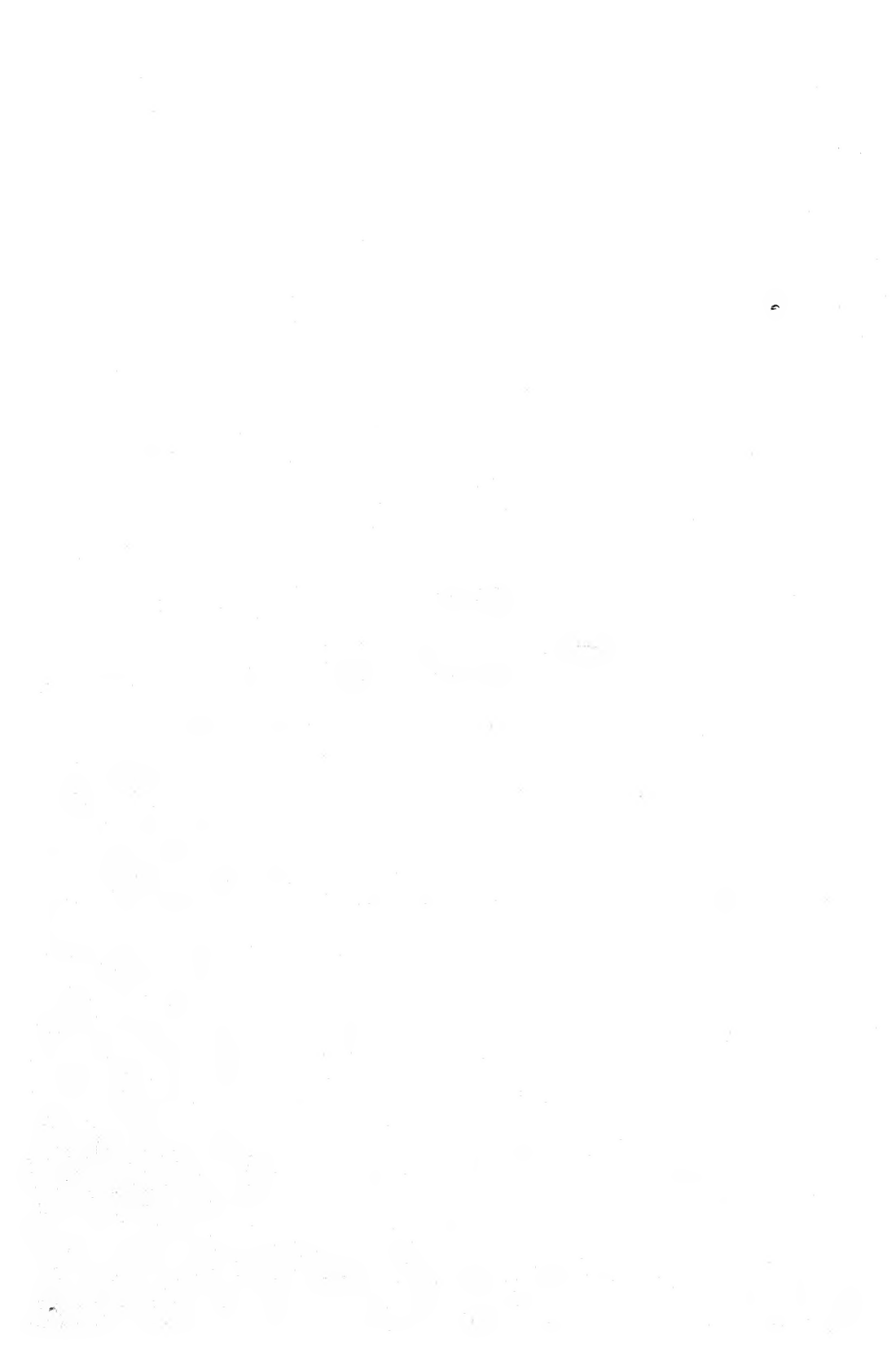
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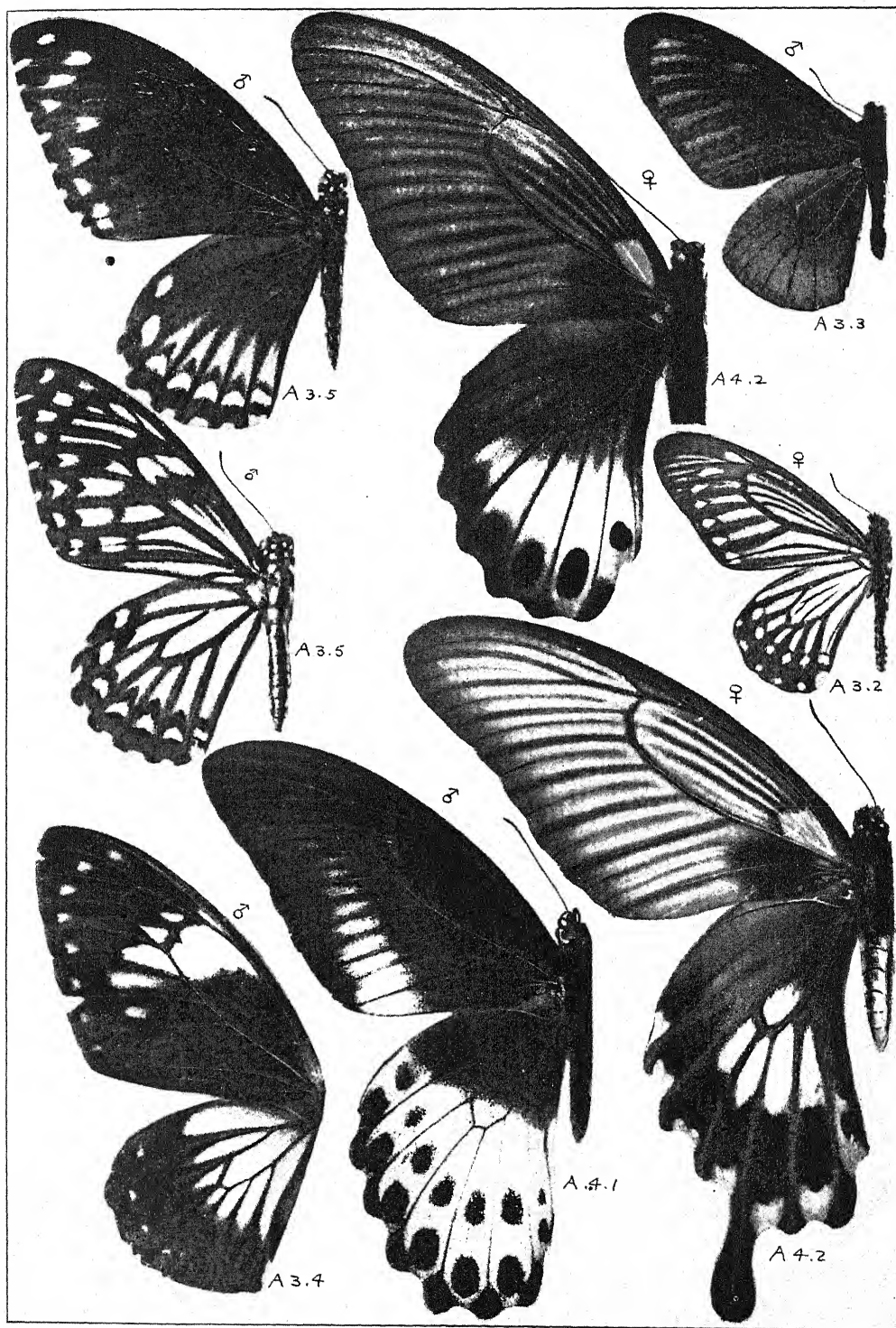
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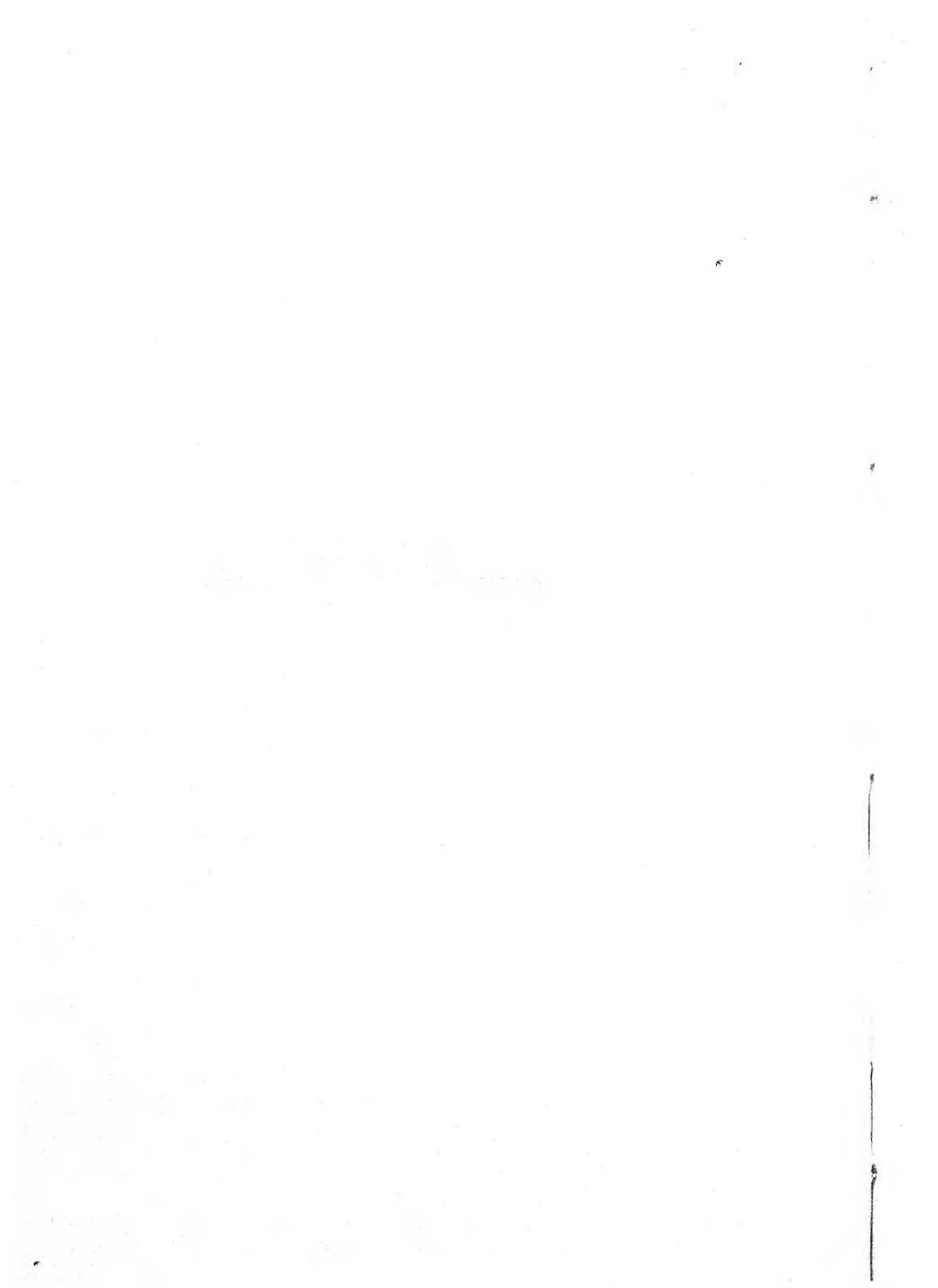
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Pansy ...	F 35	Silverfork ...	D 3	Yam ...	H 51
Panther ...	F 32	Silverline ...	H 56—57	Yamfly ...	H 49 & 50
Pasha ...	F 8	Silverspot ...	F 39	Yellow Peril ...	I 75
Peablu ...	H 28	Silverstreak ...	F 39	Yellow Swallow- tail ...	A 4
Peacock ...	A 4	blue ...	H 45	Yellowvein ...	I 71
Pierrot ...	H 9—12 & 15	Silverstripe ...	D 3 & F 39	Yeoman ...	F 45
Pioneer ...	B 8	Siren ...	F 11		
Plane ...	H 87	Skipper ...	I & I 27—31	Zebra ...	A 7
Plush ...	H 89	Snow Appollo ...	A 13	Zebra blue ...	H 13
Plushblue ...	H 50	Spangle ...	A 4		
Poilu ...	I 74	Spark ...	H 86		
Popinjay ...	F 17				

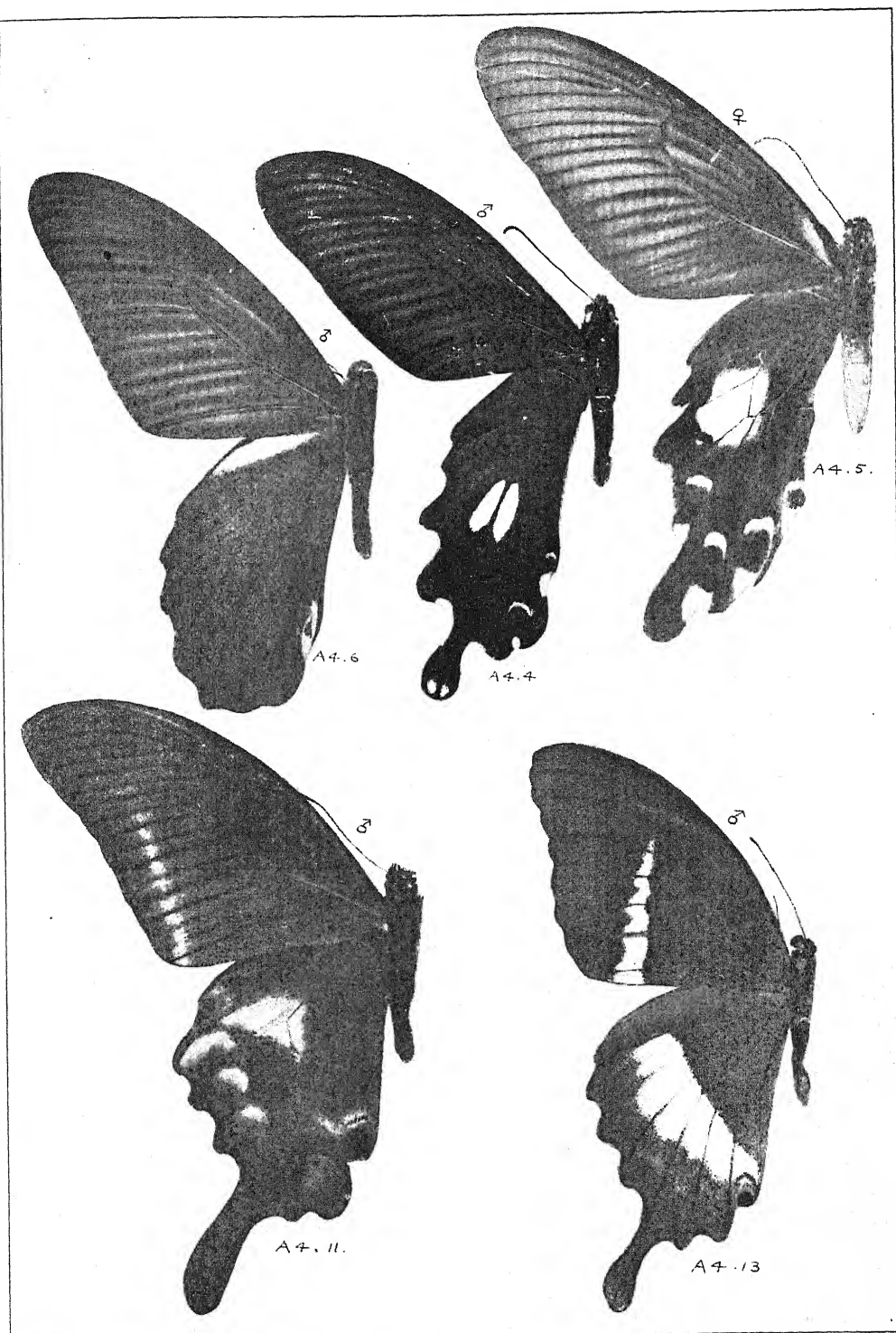






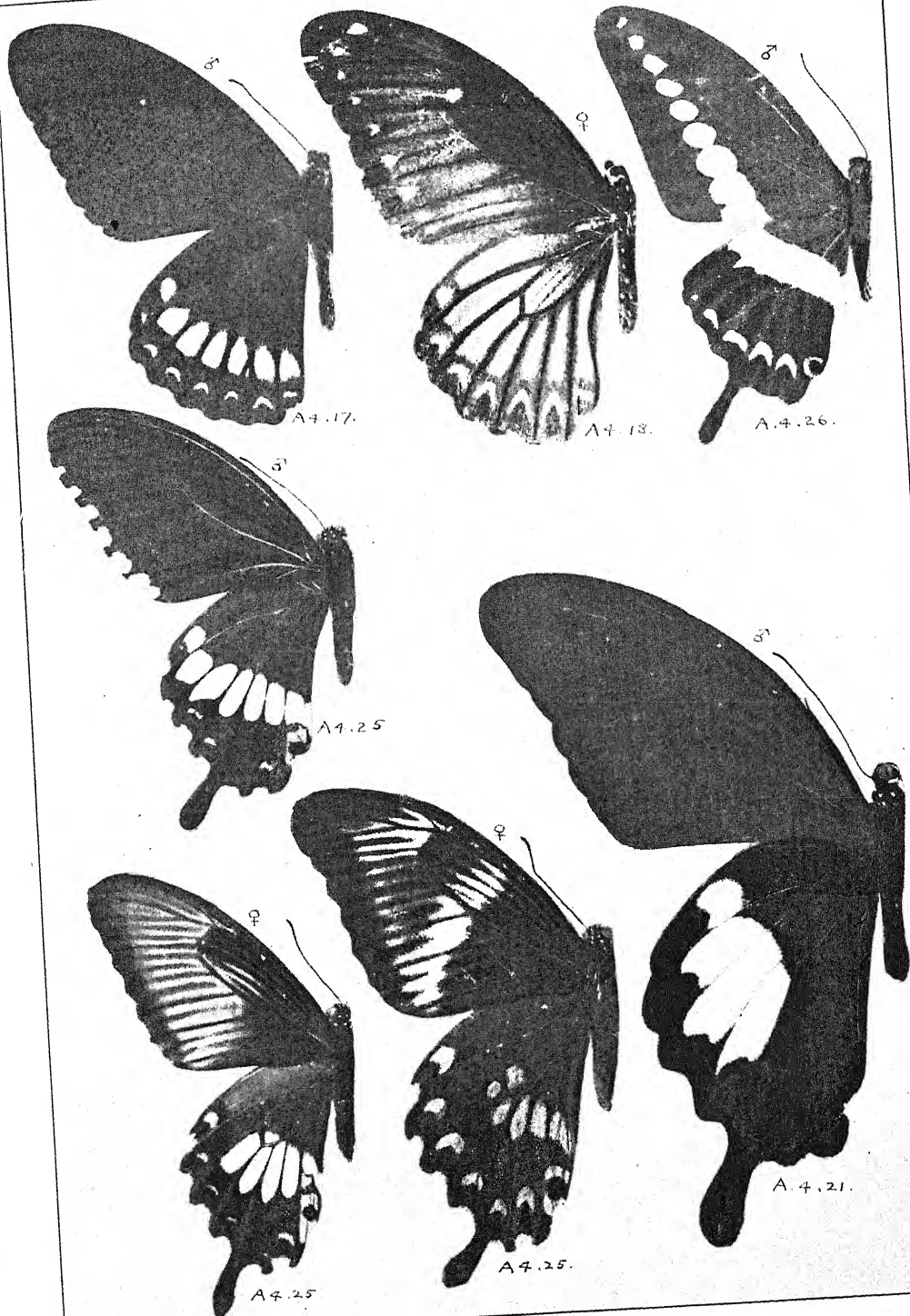




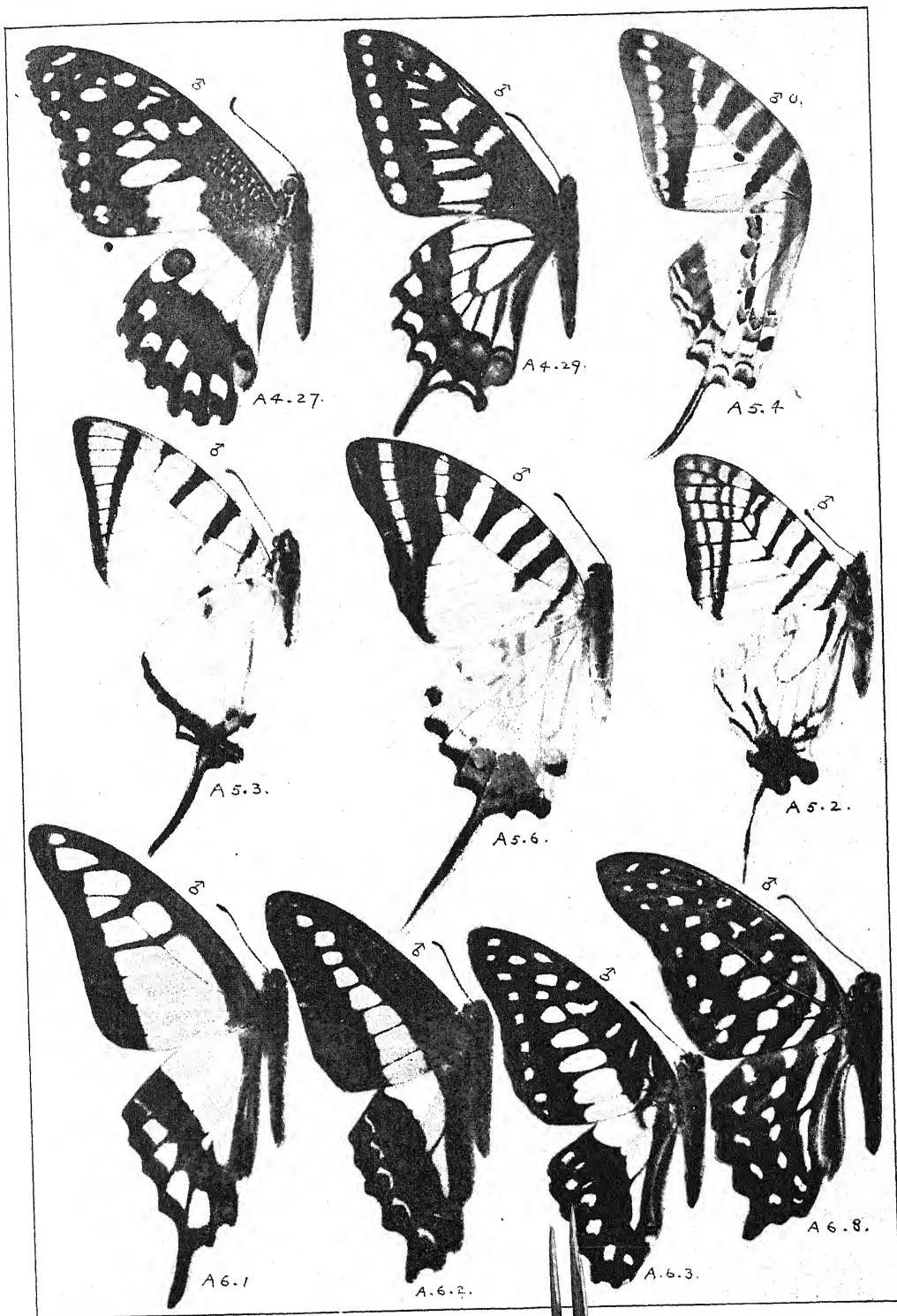


A. Papilionidae. 4. *Papilio*.

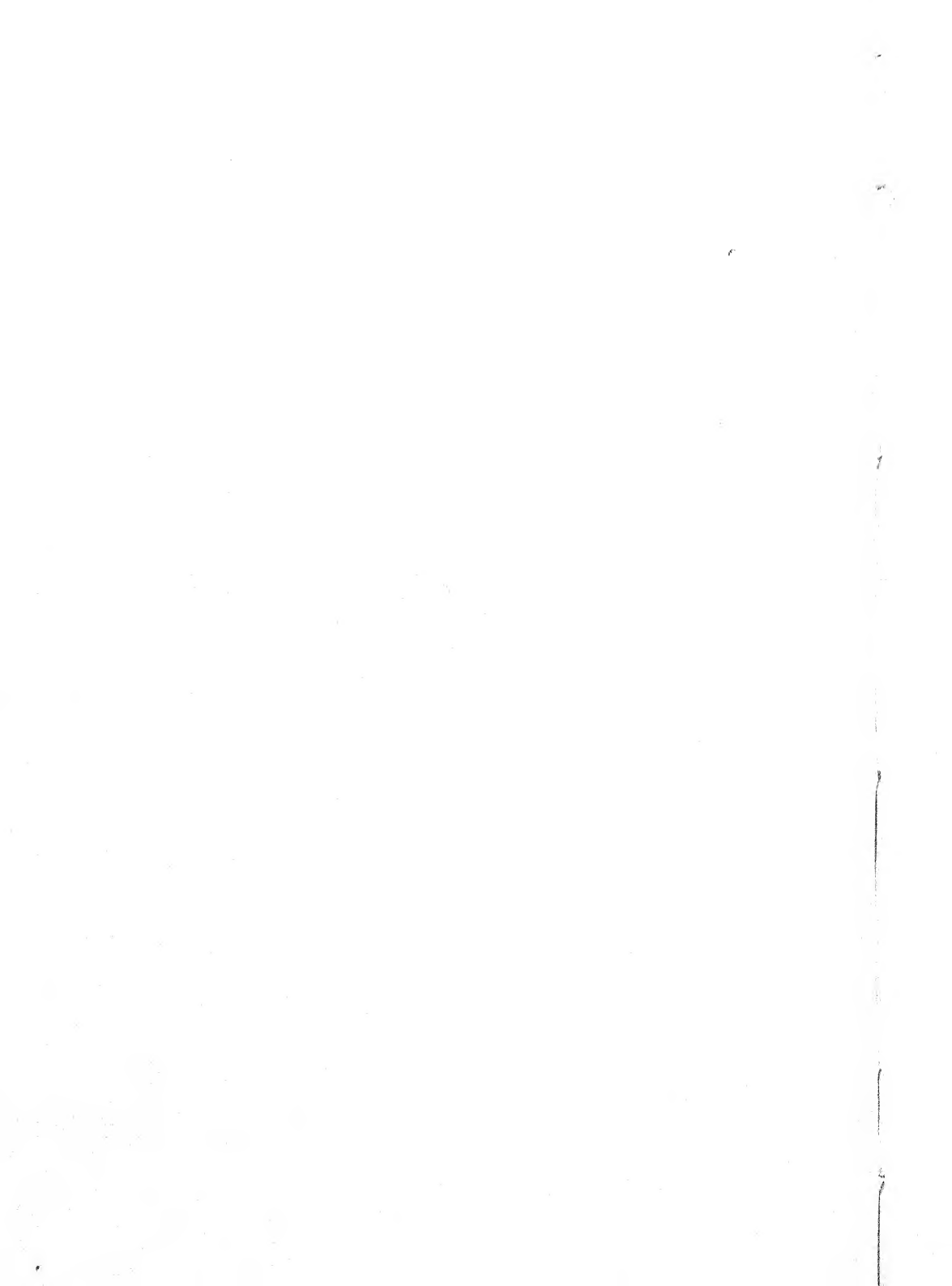




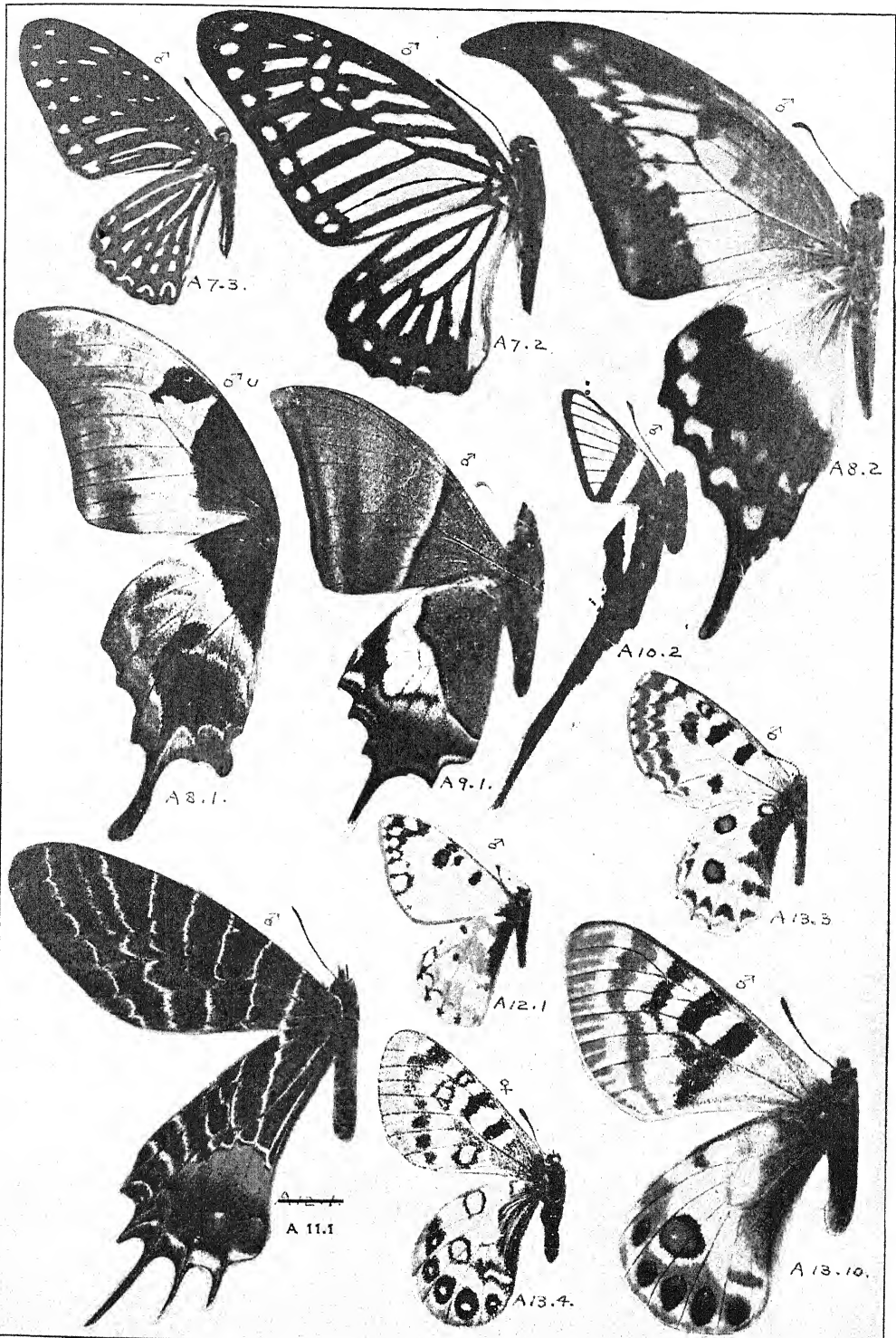




A. Papilionidae. 4. *Papilio*: 5. *Papilio*: 6. *Zetides*.







A. Papilionidae. 7. *Paranticoxis*. 8. *Meandrusa*. 9. *Teinopalpus*. 10. *Lentocircus*. 11. *Amundia*.



